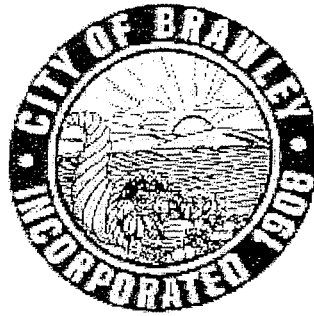


CITY OF BRAWLEY



2005 Urban Water Management Plan

FINAL

December 2005

City of Brawley, California

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City of Brawley

2005 Urban Water Management Plan

Contact Sheet

Date plan submitted to the Department of Water Resources: 1/04/06

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The Water supplier is a: **Municipality, retailer**

Utility services provided by the water supplier include: **Water, Sewer**

Is This Agency a Bureau of Reclamation Contractor? **No**

Is This Agency a State Water Project Contractor? **No**

Introduction

Urban water suppliers are required by the Urban Water Management Planning Act to update their Urban Water Management Plan (UWMP) and submit a complete plan to the California Department of Water Resources (DWR) every five years. Urban water suppliers are defined as a public or private owned water system that provides water for municipal purposes to more than 3000 customers or supplies more than 3000 acre/feet annually. An UWMP is required in order for a water supplier to be eligible for DWR administered State grants and loans and drought assistance. What this means to the City of Brawley is that to continue State Revolving Fund (SRF) funding for the new Water Treatment and Production Facility an updated UWMP must be maintained. The 2005 UWMP must be adopted by resolution by the City Council and is due December 31, 2005 to the DWR for review.

The purpose of this report is to review the overall supply and demand of water for the City of Brawley, identify any possible deficiencies in the water supply for the next 25 years, and prepare mitigation strategies. There is no foreseeable water shortage in the City of Brawley for the next 25 years. The City of Brawley uses surface water supplied by the Colorado River and can supply the City with sufficient water to meet all projected demand. Thus the City is not affected by climatic related supply shortages. Although California experienced a prolonged drought from 1987 through 1992, the drought did not affect the City's water supply.

Imperial County has been known for many years as a Mecca of raw water resources. Through the combined efforts with Federal, State, County and Local agencies, Imperial County will continue to enhance and utilize its water resources to accommodate future growth and establish a strong economy.

An awareness of the importance of a sound Water Policy is important in recognizing that water in California is becoming a scarce resource. Land use

decisions based in part upon water resources have significant effects on the physical, social, and economic character of the county. Although the Urban Water Management Plan is concerned with long range goals and objectives, attention should also be given to currently existing conditions and issues. This approach will enable the City to face important issues today, thereby avoiding problems in the future.

In addition to the statement of goals, objectives and policies, the Urban Water Management Plan includes discussions, data, and water conservation programs which provide for the prudent and conscientious management and utilization of water resources for future development in the City. The implementation of the Urban Water Management Plan is meant to assure that water resources are conserved and utilized as possible, and to provide for the long-term viability and availability of this precious resource.

The City of Brawley completed a Master Plan of Water study in 1999 which examined and forecasted reliable water supplies and demands for the city to 2025. Data from this study were utilized in this document. Since 2000, new connections in the City of Brawley are being added at a rate about 2.2% per year and water demand is increasing at a rate of about 2.2% per year. Unaccounted water losses average about 5% of total production.

Since its inception, the history of Imperial County has been tied to the availability of water for agriculture. Agriculture is the County's main economic activity for the foreseeable future. The availability of water will play an important role in determining the population and economic growth of Imperial County.

The need to conserve water and improve irrigation methods will undoubtedly become more important in the future. The County shall continue to support measures to conserve water and its beneficial uses; however it is necessary to ensure that the future growth and development of the area is not jeopardized by the redistribution of locally used water resources to other regions of the state. The loss

or redistribution of this resource will have a detrimental effect on the area's economy. Safeguards must be included in any proposed water transfer to assure that significant environmental impacts do not occur and continued local water availability is assured.

The City of Brawley receives raw water from the Imperial Irrigation District. Less than two percent of the Imperial Irrigation District's untreated water is ultimately used for urban purposes and is provided indirectly to consumers through a variety of public and private treatment agencies.

Cities within the Imperial Irrigation District's water service area that supply more than 3,000 acre-feet of water per year for urban water use are Brawley, Calexico, Calipatria, and El Centro. The other cities and unincorporated communities located in the Imperial Irrigation District's water service area, during 2000 to 2005, did not provide water to more than 3,000 customers for municipal purposes or supply more than 3,000 acre-feet of water annually for municipal purposes.

Under a worst case water supply scenario the Imperial Irrigation District is confident that urban water users (which comprise less than two percent of its annual water deliveries) can be assured delivery of their required water supply. Due to its present perfected water rights and the relatively small water demand of non-agricultural water users, the Imperial Irrigation District would not reduce or cut back urban water deliveries even in years of reduced deliveries. Since its inception in 1911, the Imperial Irrigation District has never been denied the right to divert the amount of water it has requested for agricultural purposes and other beneficial uses.

Possible disruption events in the water supply include earthquakes, water pollution and power outages. In the event of a catastrophic water supply interruption, the City could divert irrigation water into the potable water distribution system. Under this scenario non-potable water would be delivered to City customers and the water would have to be boiled by each customer prior to potable use. The non potable water could be delivered by diesel powered pumps to the City's distribution system.

A big portion of the water demand in the Colorado Basin area is for irrigation, due to the arid and warm conditions. Recycled water can be used for this; however the use of recycled wastewater is not cost effective option at this time. An expanded water conservation program is one of several priorities supported by the City, and conservation programs such as school education, public information, and landscape design and water use standards are being implemented.

Public Participation

Law

10642. Each urban water supplier shall encourage the active involvement of diverse social, cultural, and economic elements of the population within the service area prior to and during the preparation of the plan. Prior to adopting a plan, the urban water supplier shall make the plan available for public inspection and shall hold a public hearing thereon. Prior to the hearing, notice of the time and place of hearing shall be published ... After the hearing, the plan shall be adopted as prepared or as modified after the hearing.

Public Participation

The City of Brawley encourages community participation in its urban water management planning efforts. A public meeting was held on the 2005 plan in December of 2005.

Before adoption of the Urban Water Management Plan, a public meeting was held. A formal public session was held during a regular meeting of the City Council for review and comment on the draft plan before the City Council's approval. Public interest groups that participated in the development of the plan are listed in Appendix A.

Legal public notices for this meeting were published in the local newspaper. Copies of the draft plan were available at City Hall. Public notice was given declaring the availability of the Management Plan for public inspection and stating the public hearing date and time. Appendix C includes copies of public notices. A public hearing for the Management Plan was held by the Brawley City Council. Appendix E includes copies of the public comments received regarding the Management Plan and agency responses to the comments. Appendix C includes resolutions, approvals, and meeting minutes. The final Management Plan will be issued after the public hearing. The final Management Plan will be distributed to the cities of Brawley, Calexico, Calipatria, El Centro, Holtville, Imperial, and

Westmorland; Imperial County Planning/Building and Public Works Departments; Imperial Irrigation District's Public Affairs; public libraries in the cities of Brawley, Calexico, El Centro, and Imperial; and to others on request.

Plan Adoption

The City of Brawley prepared its Urban Water Management Plan during November 2005. The plan was adopted by City Council on December 20, 2005 and submitted to the California Department of Water Resources within 30 days of Council approval. Attached to the cover letter addressed to the Department of Water Resources and as Appendix B are copies of the signed Resolution of Plan Adoption. This plan includes all information necessary to meet the requirements of California Water Code Division 6, Part 2.6 (Urban Water Management Planning).

Agency Coordination

Law

10620 (d) (2) Each urban water supplier shall coordinate the preparation of its plan with other appropriate agencies in the area, including other water suppliers that share a common source, water management agencies, and relevant public agencies, to the extent practicable.

Coordination within the City

The development of this plan was coordinated with the City Staff, the Mayor's Office, City Planning, Fire, Building, Police, and local Emergency Services offices.

Drafts of the Management Plan were distributed to Imperial Irrigation District, the Imperial County Planning/Building and Public Works Departments, and the City of Brawley for review and revisions. The final draft was distributed in January 2006 to Imperial Irrigation District and the cities of Brawley, Calexico, Imperial and El Centro, and Imperial County staff. Comments and recommendations were incorporated into the Management Plan. Copies of the Management Plan were distributed to Imperial County Planning/Building and Public Works Departments; Imperial Irrigation District's Public Affairs; cities of Brawley, Calexico, Calipatria, El

Centro, Holtville, Imperial, and Westmorland; the public libraries of Brawley, Calexico, El Centro, and Imperial; and to others on request for public review.

Interagency Coordination

Table 1 summarizes the efforts Brawley has taken to include various agencies and citizens in its planning process.

Table 1. Coordination and Public Involvement						
Entities		contacted for assistance	made copy of draft plan available	Commented on the draft	Attended public meetings	sent a notice of intention to adopt
Wholesaler – Imperial Irrigation District		✓	✓	✓		✓
County of Imperial		✓	✓			✓
City of Calexico - Retailer		✓	✓			✓
City of El Centro - Retailer		✓	✓			✓
City of Brawley Staff		✓	✓		✓	✓
General Public			✓		✓	✓
Salton Sea Authority		✓	✓			✓

Supplier Service Area

Law

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631. (a) Describe the service area of the supplier, including current and projected population, climate, and other demographic factors affecting the supplier's water management planning. The projected population estimates shall be based upon data from the state, regional, or local service agency population projections within the service area of the urban water supplier and shall be in five-year increments to 20 years or as far as data is available.

LOCATION



Figure 1 - Brawley Location Map

The City of Brawley is located at Highways 86 and 78 intersection. See Figure 2 for Brawley Urban Area.

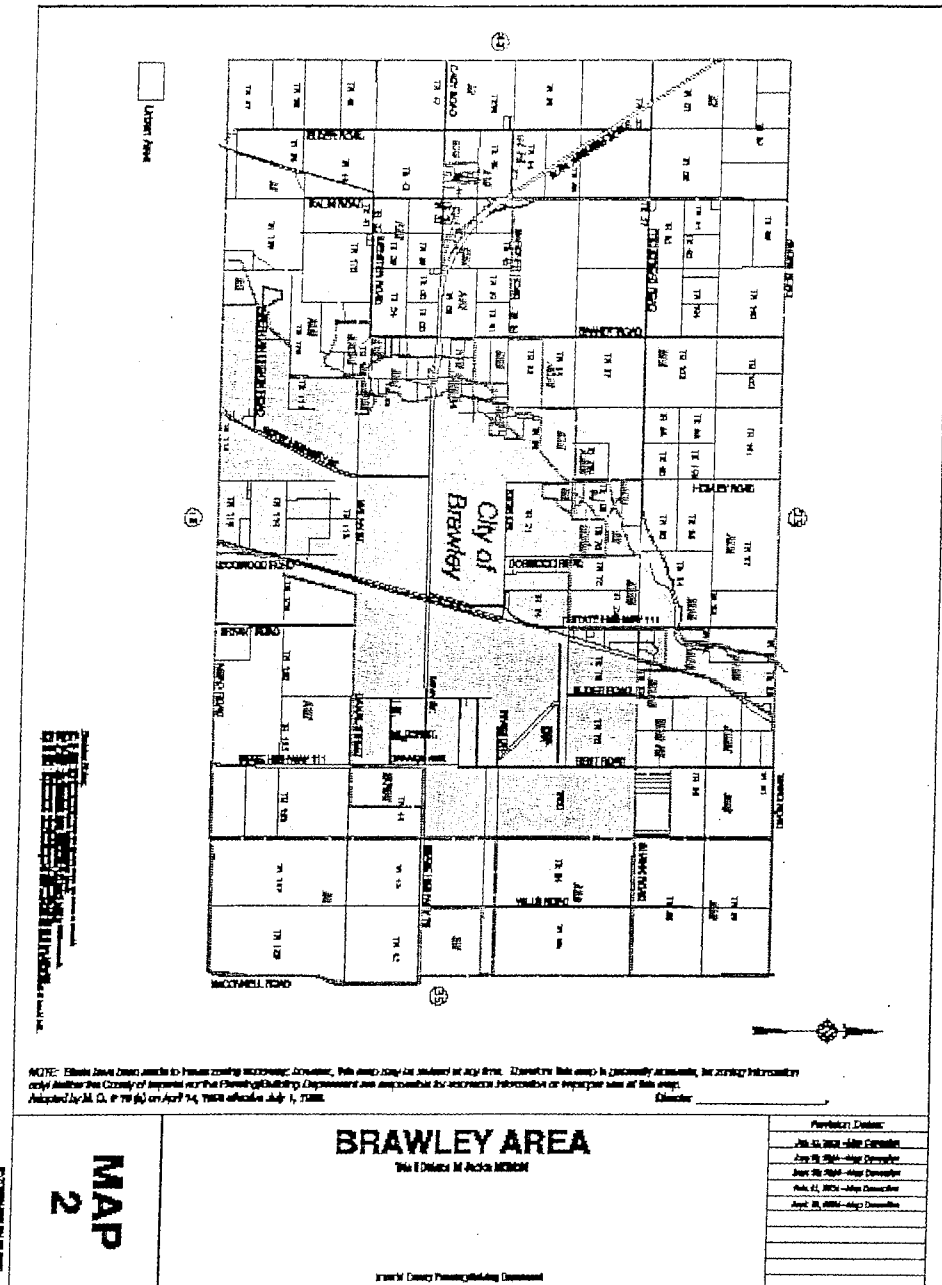


Figure 2 - Brawley Urban Area

The City of Brawley's total planning area covers approximately 15,469 acres. Land uses within Brawley's incorporated boundaries include: 823 acres for rural residential, 2,030 acres for low density residential, 592 acres for medium density residential, 1,012 acres of public facilities, 620 acres for commercial, 975 acres for industrial, 440 acres for light industrial and business, 1,206 acres of open space, 1,182 acres of transportation, and 6,589 acres for agricultural use.

The City of Brawley Urban Area has approximately 9,890 acres and surrounds the incorporated City of Brawley. The Brawley Urban Area is generally bounded on the west by the New River, Brandt Road, Kalin Road, Poe Subdivision and State Highway 86; on the north by Ward Road; on the east by Best Road, the Livesley Drain, and a line approximately one-half mile east of Best Road; and on the south by the Rockwood Canal, Mead Road, the Best Canal, Dogwood Road, and Shartz Road.

The City of Brawley is located in Imperial County, which is located in the southeast corner of California. It is bordered on the west by San Diego County, on the north by Riverside County, on the east by the Colorado River which is the California/Arizona boundary, and on the south by 84 miles of the International Boundary with the Republic of Mexico. The Imperial County encompasses an area of 4,597 square miles or 2,942,080 acres.

The geographic center of the Imperial Valley is one of the finest agricultural areas in the world, despite the fact that it is in a very arid region. The general area of the Imperial Valley, also known as the Imperial Unit, is bounded on the north by the south shore of the Salton Sea, on the south by the All-American Canal, on the east by the East Highline Canal, and on the west by the Westside Main Canal.

Approximately fifty percent of lands in Imperial County are undeveloped and are under federal ownership and jurisdiction. One-fifth of the nearly 3 million acres in Imperial County are irrigated for agricultural purposes, most notably the central

area known as Imperial Valley. The Imperial Valley irrigated agriculture consists of 512,163 acres (Imperial County General Plan, 1998, Overview p. 7).

The developed area within the Imperial Valley represents less than one percent of the total amount of land. Approximately seven percent of Imperial County is within the boundaries of the Salton Sea.

The City receives water from the Imperial Irrigation District. The Imperial Irrigation District's irrigation total service area, lying entirely within Imperial County, is divided into four units: Imperial, West Mesa, East Mesa, and Pilot Knob, with a gross acreage of 1,061,637 acres.

The City of Brawley's sphere of influence is located within the Imperial Valley and is defined as the Imperial Unit of the Imperial Irrigation District's Irrigation Service Area (Imperial Unit). The Imperial Unit includes the urban areas for the cities of Brawley, Calexico, and El Centro and part of Imperial County's unincorporated area. The Management Plan's water supplier service area, also known as the Imperial Unit, has a total area of 694,346 acres.

A significant amount of water that is delivered is for agricultural purposes. The causes of the agricultural success of this region are two-fold: the rich soils which have accumulated on the valley floor over thousands of years; and the large quantity of water that is transported from many miles east via the All-American Canal, and subsequently distributed to farmlands by a complex system of smaller canals.

A significant geographical feature in the County is the Salton Trough, which contains the Salton Sea and the Imperial Valley, and has been evolving for millions of years. It is a "rift" in the earth's crustal plates. The East Pacific Rise is the boundary between the Pacific and North American Plates. It extends up the Gulf of California by a series of "spreading centers" with strike slip faults. The thinning of the crust from the slow but continuous widening of the Salton Trough causes the

earth's magma to rise closer to the surface and generates abnormally high heat flow, which in turn heats deep ground waters.

The trough is a structural extension of the Gulf of California. In prehistoric times it contained the ancient Lake Cahuilla (not to be confused with the present Lake Cahuilla which is located at the terminus of the Coachella Branch of the All-American Canal).

The Imperial Valley was created when the Colorado River formed a delta that isolated the Salton Trough from the Gulf of California. Subsequently, under desert conditions, the inland sea dried up. Later, the trough was occupied by lakes for various periods, and deposition into these lakes gave the valley its characteristic flat lands and fertile soils.

CLIMATE FACTORS

Imperial Valley elevations range from sea level to 273 feet below sea level. The Mexican Border is located at the southern end of Imperial Valley and the elevation is sea level. The southern end of the Salton Sea is located at the northern end of Imperial Valley and the elevation is 273 feet below sea level. The relatively flat topography of the Imperial Valley and surrounding areas in conjunction with strong night and day temperature differentials, particularly in the summer months, produce moderate winds and deep thermal circulation systems. The thermal systems facilitate general dispersion of the air.

Climate

The Imperial County is considered an arid desert, characterized by hot, dry summers and mild winters. Summer temperatures typically exceed 100 degrees Fahrenheit and the winter low temperatures rarely drop below 32 degrees Fahrenheit. The remainder of the year has a relatively mild climate with

temperatures averaging in the mid-70s. The average annual air temperature is 72 degrees Fahrenheit and the average frost-free season is about 300 days per year.

Annual rainfall in the Imperial Valley averages less than three inches, with most rainfall associated with brief but intense storms. The majority of the rainfall occurs from November through March. Periodic summer thunderstorms are common in the region.

Table 2. Brawley Climate Data

	Jan	Feb	Mar	Apr	May	Jun	July	Aug	Sept	Oct	Nov	Dec	Total
Avg temp.	54.4	58.4	63.5	69.8	77.1	84.9	91.4	91.2	86.1	75.1	62.4	54.8	72.4
Avg. max. temp. (°F)	69.4	73.6	79.2	86.3	94.3	103.1	107.7	106.6	102.5	91.8	78.7	70.1	88.6
Avg. min. temp (°F)	39.3	43.3	47.8	53.3	60.0	66.8	75.2	75.9	69.7	58.4	46.1	39.6	56.3
Avg. precip. (in.)	0.39	0.40	0.26	0.08	0.03	0.01	0.05	0.33	0.29	0.23	0.17	0.44	2.67

Source: <http://www.wrcc.dri.edu/CLIMATEDATA.html>

Prevailing Winds

Wind data from NAF El Centro that is used at Brawley Municipal Airport, show that the prevailing winds blow in a western direction. Therefore, winds from the wastewater treatment facility blow away from the City of Brawley. A crosswind occasionally blows in a southeast direction, toward the city, but with a velocity of less than 10 knots.

DEMOGRAPHIC FACTORS

Population

The Population Research Unit of the California Department of Finance (DOF) estimates annual changes in population. According to the DOF estimates, Imperial County's 2005 unincorporated area population is 34,794 and Imperial County's total

population is 161,800 (State of California Department of Finance). This compares to the 2000 census results of 32,583 people for Imperial County's unincorporated area and 142,361 people for Imperial County's total population. The increase of 19,439 people is a 13 percent increase over Imperial County's 2000 population, or 2.5% annually.

According to DOF January 2005 estimates, City of Brawley's 2005 population is 24,042 with 7,336 housing units. Between the years of 2000 to 2003 there was very little growth. The growth in this time range varied between 0.5% and 1.5%. There was not much development during this period.

During the year 2003 development began in earnest in Imperial County. The total County population increased by 3.0% from 2004 to 2005. The growth in the City of Brawley between January 2004 and January 2005 was 2.2%. It would be useful to assume that the growth will continue at this annual rate until 2025. However, there are numerous current and proposed developments within the City that could increase the growth substantially. Population increases in the City of Brawley for the years between 2005 and 2025 are estimated to be 3.7% compounded annually. The population projections stem from incoming development and industry to the City of Brawley.

Table 3, Current and Projected Population, is from the Southern California Association of Government (SCAG) 2004 Regional Transportation Plan (RTP) Adopted Forecast, April 2004.

Table 3. Current and Projected Population					
	2005	2010	2015	2020	2025
City of Brawley	24,042	29,525	34,606	39,622	49,036

Population figures were obtained from the Southern California Association of Government (SCAG), 2004 RTP Adopted Forecast, April 2004 unless otherwise noted. These figures may vary from previous reports due to changes in estimates, projection, and populations.

**Table 4. Selected County Pop. Estimates with Annual Percent Change
January 1, 2004 and 2005**

County	Total Population		Percent Change
	01/01/04	01/01/05	
ALAMEDA	1,496,968	1,507,500	0.7
ALPINE	1,265	1,262	-0.2
AMADOR	37,216	37,574	1.0
BUTTE	212,237	214,119	0.9
CALAVERAS	43,995	44,796	1.8
COLUSA	20,327	20,880	2.7
CONTRA COSTA	1,008,944	1,020,898	1.2
DEL NORTE	28,557	28,895	1.2
EL DORADO	170,456	173,407	1.7
FRESNO	866,523	883,537	2.0
GLENN	27,824	28,197	1.3
HUMBOLDT	130,392	131,334	0.7
IMPERIAL	157,064	161,800	3.0
Total State of CALIFORNIA	36,271,091	36,810,358	1.5

Table 5. Imperial County City Populations – DOF California						
CITY	04/01/00	01/01/01	01/01/02	01/01/03	01/01/04	01/01/05
BRAWLEY	22,052	22,379	22,553	22,811	23,513	24,042
CALEXICO	27,109	28,066	29,857	32,128	34,420	36,274
CALIPATRIA	7,289	7,282	7,620	7,663	7,808	7,904
EL CENTRO	38,025	38,499	38,833	39,496	40,047	41,030
HOLTVILLE	5,612	5,678	5,708	5,730	5,753	5,745
IMPERIAL	7,560	7,771	8,132	8,554	9,326	9,567
WESTMORLAND	2,131	2,176	2,200	2,209	2,221	2,444
BALANCE OF COUNTY	32,583	33,063	33,181	33,720	33,976	34,794
INCORPORATED	109,778	111,851	114,903	118,591	123,088	127,006
COUNTY TOTAL	142,361	144,914	148,084	152,311	157,064	161,800

Table 6. TOTAL POPULATION PROJECTIONS FOR IMPERIAL COUNTY - DOF					
	2000	2010	2020	2030	2040
IMPERIAL	143,660	178,201	214,386	254,989	296,656

Land Use

The Imperial Valley is predominantly an agricultural area. Agricultural development in the Imperial Valley began at the turn of the twentieth century and now includes approximately 500,000 acres of irrigated land that support a \$1 billion annual local agricultural economy. Imperial Irrigation District is the regional water supplier in Imperial County, delivering Colorado River flows to all agricultural lands and urban water retailers within its contracted water service area. The Imperial Irrigation

District operates open channel gravity flow irrigation and drainage systems and continually strives to develop innovative ways to improve its operations, increase reliability, and to conserve water.

While the agriculture-based economy is expected to continue, land use will vary somewhat over the years as urbanization and growth occurs in the rural areas adjacent to existing urban areas.

Current Land Use

Agriculture is the predominant land use in the Imperial Valley with approximately seventy percent utilized for agricultural purposes. A mild climate, year-round growing season, good soils, and a gently sloped topography combined with the strong historical Colorado River water rights make Imperial Valley one of the most productive agricultural regions in the world. Due to contractual restrictions total farmable acres have remained fairly constant over the past five years while total net acres cropped have exhibited minor fluctuations. Cropping patterns have remained relatively constant with yearly variations occurring as a result of market price fluctuations, production cost factors, and insect/disease pressures.

There is a trend towards forage crops and away from vegetable crops. More than 120 types of crops are currently grown. In terms of acreage, the major crops within Imperial Irrigation District boundaries are alfalfa, bermuda, wheat, sugar beets, lettuce, melons, Carrots, onions, and broccoli. In the Imperial Valley, the total area farmed was 488,499 acres in 1990, 481,151 acres in 1995, and 479,000 acres in 2000 (Imperial Irrigation District, 2000).

Urban land uses within the Imperial Unit consist of cities, state prisons, a military base, geothermal plants, and other smaller industrial users. Most of the urban lands are concentrated in and around the incorporated and unincorporated cities with some small clusters of rural residences located away from the population centers.

The City of Brawley is located at the intersection of Highways 86 and 78. The City of Brawley's total planning area covers approximately 15,469 acres. Land uses within Brawley's incorporated boundaries include: 823 acres for rural residential, 2,030 acres for low density residential, 592 acres for medium density residential, 1,012 acres of public facilities, 620 acres for commercial, 975 acres for industrial, 440 acres for light industrial and business, 1,206 acres of open space, 1,182 acres of transportation, and 6,589 acres for agricultural use.

The City of Brawley Urban Area has approximately 9,890 acres and surrounds the incorporated City of Brawley. The Brawley Urban Area is generally bounded on the west by the New River, Brandt Road, Kalin Road, Poe Subdivision and State Highway 86; on the north by Ward Road; on the east by Best Road, the Livesely Drain, and a line approximately one-half mile east of Best Road; and on the south by the Rockwood Canal, Mead Road, the Best Canal, Dogwood Road, and Shartz Road. See Figure 3.3.2.1.1 for Brawley Urban Area.

Table 7. IMPERIAL COUNTY Land Use Distribution (in Acres)

Irrigated (Agriculture)		
	Imperial Valley	512,163
	Bard Valley (Including Reservation)	14,737
	Palo Verde Valley	7,428
	Total	534,328 (18.2%)
Developed		
	Incorporated	9,274
	Unincorporated	8,754
	Total	18,028 (0.6%)
Salton Sea**		211,840 (7.2%)
Desert/Mountains		
	Federal	1,459,926
	State	37,760
	Indian	10,910
	Private	669,288
	Total	2,177,884 (74.0%)
IMPERIAL COUNTY TOTAL		2,942,080 Acres

* All acreages are approximations and should, therefore, only be used for informational purposes.

** Calculated at elevation of -230.

Source: Imperial County General Plan, County Overview-September 1985.

Future Land Use

The Imperial County General Plan, updated September 2004, identifies urban areas surrounding the incorporated cities of Brawley with 9,890 acres, Calexico with 6,980 acres, Calipatria with 2,880 acres, El Centro with 16,000 (City of El Centro Draft General Plan, June 2003) acres, Holtville with 4,080 acres, Imperial with 8,480 acres, and Westmorland with 880 acres. Urban areas surrounding the unincorporated communities include Heber with 960 acres, Niland with 1,290 acres and Seeley with 1,520 acres. Urban areas for specific plans located within Imperial Unit boundaries include: East Border Crossing Specific Plan area with 1,700 acres, Holtville Air Strip Specific Plan area with 1,830 acres, Mesquite Lake Specific Plan area with 5,760 acres (9 sq miles), and Heber Specific Plan area with 4,770 acres. Some of these designated urban areas have been developed and some have not. Some of these areas could possibly complete developments in the future.

The total urban areas surrounding cities and communities located within the Imperial Unit is 52,960 acres or 7.6 percent of the Imperial Unit area. The majority of these lands are currently farmed. Four Specific Plan Areas within the Imperial Unit are designated for possible development. The total area within the four Specific Plan Areas is 14,060 acres or 2.0 percent of the Imperial Unit area. The total combined urban area surrounding cities and communities and for the four Specific Plan Areas is 67,020 acres or 9.6 percent of the Imperial Unit area.

Urban areas yet to be developed will be characterized by a full level of urban services, in particular public water and sewer systems, and will contain or propose a broad range of residential, commercial, and industrial uses. It is anticipated that most urban developments, yet to be developed, will eventually be annexed or incorporated into existing cities, and provide the full range of public infrastructure normally associated with municipalities such as public sewer and water, drainage

improvements, street lights, fire hydrants, and fully improved paved streets with curbs and sidewalks that are consistent with city standards.

Trends in land use point to an increase in the development of existing urban areas to provide for larger residential capacity and increased population. With an increase in the development of existing urban areas, there will be associated increases in service and infrastructure. The total urban land use in the years 2005 through 2030 will remain small in comparison to agriculture land use within the Imperial Unit.

Water Sources (Supply)

Law

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631 (b) Identify and quantify, to the extent practicable, the existing and planned sources of water available to the supplier over the same five-year increments [to 20 years or as far as data is available.]

Water Supply Sources

The City of Brawley depends solely on the Colorado River for surface water inflows, supplied by the Imperial Irrigation District. The Imperial Irrigation District imports the raw Colorado River water and distributes it to the City and for agricultural purposes. The City treats the raw water to meet state and federal drinking water standards before distribution.

Rainfall is less than three inches per year and does not contribute to Imperial Irrigation District's water supply, although at times it may reduce agricultural water demand. The groundwater in the Imperial Unit is of poor quality and is generally unsuitable for domestic or irrigation use.

Water Rights

The Imperial Irrigation District was formed in 1911 to acquire properties of the bankrupt California Development Company and its Mexican subsidiary. By 1922, the Imperial Irrigation District had acquired 13 mutual water companies, which had developed and operated distribution canals in the Imperial Valley. By the mid-1920s, the Imperial Irrigation District was delivering water to nearly 500,000 acres. Since 1942, water has been diverted at Imperial Dam on the Colorado River through the All-American Canal, both of which the Imperial Irrigation District operates and maintains.

The Imperial Irrigation District's rights to divert Colorado River water are long standing. Imperial Irrigation District holds legal titles to all its water and water rights in trust for landowners within the district (California Water Code §§20529 and 22437; Bryant v. Yellen, 447 U.S. 352, 371 (1980), fu.23.). Begilling in 1885 a number of individuals, as well as the

California Development Company, made a series of appropriations of Colorado River water under California law for use in the Imperial Valley. Pursuant to then-existing California laws, these appropriations were initiated by the posting of public notices for 10,000 cubic feet per second (cfs) each at the point of diversion and recording such notices in the office of the county recorder. The individual appropriations were subsequently assigned to the California Development Company, whose entire assets, including its water rights, were later bought by the Southern Pacific Company. After the Imperial Irrigation District was formed in 1911, the Southern Pacific Company conveyed all of its water rights to the Imperial Irrigation District on June 22) 1916.

The Imperial Irrigation Districts predecessor right holders made reasonable progress in putting their pre-1914 appropriative water rights to beneficial use. By 1929, 424,145 acres of the Imperial Valley were under irrigation. Had the Imperial Irrigation District not subsequently modified its pre-1914 appropriative rights, the Imperial Irrigation District would have perfected its pre-1914 appropriative water right at over 7 million acre-feet annually.

Subsequently, in 1921 representatives from the seven Colorado River basin states with the authorization of their legislatures and at the urging of the Federal government, began negotiations regarding the distribution of waters from the Colorado River. In November of 1922, the representatives from the upper (Colorado, New Mexico, Utah and Wyoming) and lower (Arizona, California, and Nevada) basin states signed the Colorado River Compact (Compact), an interstate

agreement giving each basin perpetual rights to annual apportionments of 7.5 million acre-feet of Colorado River water annually.

The Compact was made effective by provisions in the 1928 Boulder Canyon Project Act (45 Statute 1056)) which authorized the construction of Hoover Dam and the All-American Canal and served as the United States' consent to accept the Compact. Officially enacted on June 25,

1929 through a Presidential Proclamation, this act resulted in the ratification of the Compact by six of the basin states and also required California to limit its annual consumptive use to 4.4 million acre-feet of the lower basin's apportionment, plus not less than half of any excess or surplus water unapportioned by the Compact. Arizona refused to sign and subsequently filed a lawsuit. California abided by this federal mandate through the implementation of its 1929 Limitation Act. The Boulder Canyon Project Act moreover authorized the Secretary of the Interior (Secretary) to "contract for the storage of water. . . and for the delivery thereof. . . for irrigation and domestic uses", and further defined the lower basin's apportionment split by allocating 0.3 million acre-feet of water to Nevada and 2.8 million acre-feet of water to Arizona. While the three states never formally accepted or agreed to these terms, a 1964 Supreme Court decision (Arizona vs. California, 373 US. 546) declared their consent to be inconsequential since the Boulder Canyon Project Act was authorized by the Secretary.

Following the implementation of the Boulder Canyon Project Act, the Secretary requested California make recommendations regarding the distribution of its allocation of Colorado River water. In August of 1931, under the direction of the Chairmanship of the State Engineer, the California Seven-Party Agreement was developed and authorized by the affected parties in order to prioritize California water rights. The Secretary accepted this recommendation agreement and established these priorities (as shown in Table 4.0.1) through General Regulations issued in September of 1931. The first four priority allocations account for

California's 4.4 million acre feet allotment, with agricultural entities utilizing 3.85 million acre-feet of that total. The remaining priorities are defined for years in which the Secretary declares that excess waters are available. Finally, it should also be noted that a 1944 treaty entitles Mexico to an annual apportionment of 1.5 million acre-feet of Colorado River water and additional 200,000 acre-feet in years that excess water is available.

Pursuant to the provisions of the Boulder Canyon Project Act adopted in 1929, the California Limitation Act (Act of March 4, 1929; Chapter 16, 48th Session; Statutes and Amendments to the Codes, 1929, p.38-39.), and the Secretary's contracts, California was apportioned an annual 4.4 million acre-feet out of the lower basin allocation of 7.5 million acre-feet annually, plus 50% of any available surplus water. The further apportionment of California's share of Colorado River water was made by the Secretary of the Interior by entering into contracts with California water right holders. On December 1, 1932 the Secretary, acting on behalf of the United States, executed a contract with Imperial Irrigation District to deliver Colorado River water. The Imperial Irrigation District agreed to limit its California pre-1914 appropriative water rights in quantity and priority to the apportionments and priorities contained in the Seven-Party Agreement. Following execution of the Seven-Party Agreement, the Imperial Irrigation District filed eight California applications between 1933 and 1936 to appropriate water pursuant to the California Water Commission Act. The Imperial Irrigation District filed such applications without waiving its rights as a pre-1914 appropriator, and the applications sought rights to the same quantity of Colorado water as had been originally appropriated-over 7 million acre-feet annually. However, the applications also incorporated the terms of the Seven-Party Agreement, thus incorporating the apportionment and priority parameters of the Seven-Party Agreement into Imperial Irrigation District's appropriative applications. Permits were granted on the applications in 1950.

At the time the Imperial Irrigation District entered into its contract with the Secretary of the Interior, it was anticipated that the lands to be served with Colorado River

water in the Coachella Valley to the north would become a part of the Imperial Irrigation District. However, the Coachella farmers eventually decided that they preferred to have their own delivery contract with the Secretary, and an action was brought by the Coachella Valley Water District to protest the Imperial Irrigation District's court validation of the 1932 Imperial Irrigation District water service and repayment contract with the Secretary of the Interior. In 1934, Imperial Irrigation District and Coachella Valley Water District executed a compromise agreement which paved the way for Coachella Valley Water District to have its own contract with the Secretary provided it subordinated its Colorado River entitlement, in perpetuity, to the Imperial Irrigation District entitlement. In other words, within the third, sixth and seventh priority agricultural pool, as set forth in the Seven-Party Agreement and the various California water delivery contracts, Imperial Irrigation District's water use takes precedence over Coachella Valley Water District's use. Under the third priority Coachella Valley Water District receives water out of the annual 3.85 million acre-feet agricultural pool after water uses by Palo Verde, Yuma Project, and Imperial Irrigation District are deducted.

Both the Colorado River Compact and the Boulder Canyon Project Act contained provisions that required satisfaction of "present perfected rights", or appropriative rights acquired pursuant to state law that were in existence prior to enacting legislation. Imperial Irrigation District's water rights can be classified as two types, "present perfected" and/or "contract." The 1964 Supreme Court decree (*Arizona vs. California*, 373 U.S. 546), in conjunction with a supplemental 1979 decree (*Arizona vs. California*, 439 U.S. 419, 429), awarded the Imperial Irrigation District a "present perfected right" to 2.6 million acre-feet of Colorado River Water annually. This legal decision reinforced the rights to this water that the Imperial Irrigation District had previously established through appropriations based on historical usage. These present perfected rights are essential to the Imperial Irrigation District as they guarantee priority access to Colorado River water before those without these rights (after Mexico's allotment has been satisfied). Of the Seven-Party Agreement entities, only Palo Verde Irrigation District (PVID), Imperial Irrigation District, and

the Yuma Project (non-Indian portions) have present perfected rights. Imperial Irrigation District's remaining water allocations are based on "contract rights" from the December 1932 contract with the Secretary of the Interior (as modified by the 1934 Compromise Agreement with Coachella Valley Water District). Contract rights for all California entities are described in Article 17 of the 1932 Contract and in their individual contracts with the Secretary. While signatories to the 1931 Seven Party Agreement, Los Angeles, San Diego, and the County of San Diego have since merged their rights with those of the Metropolitan Water District of Southern California, who originally was granted a fourth priority 550,000 acre-feet allotment of California's 4.4 million acre-feet apportionment.

The water of the Colorado River is used by both the Upper Basin States (Colorado, New Mexico, Utah, Wyoming) and the Lower Basin States (Arizona, California, and Nevada), as well as by Mexico. In accordance with the Colorado River Compact of 1922, the Upper and Lower Basin States are each entitled to the exclusive beneficial consumptive use of 7.5 million acre-feet (MAF) of Colorado River water each year, in perpetuity. In addition, an option is granted to the Lower Basin States for the use of an additional 1.0 MAF for beneficial consumptive use. The 1929 California Limitation Act limits California's annual consumptive usage to 4.4 MAF, plus not more than one-half of any excess or surplus water unapportioned by the Compact.

By treaty signed on February 3, 1944, Mexico is entitled to 1.5 MAF of the Colorado River water each year. In years of low flow, any shortfall required to meet Mexican treaty rights will be made in equal quantities by the Upper and Lower Basin States. This treaty takes precedence over the Colorado River Compact of 1922.

In 1928, The Boulder Canyon Project Act was passed by Congress which authorized the construction of Hoover Dam and Power Plant and the All-American Canal to Imperial and Coachella valleys. The Act also required that the District and other water users to enter into water delivery contracts with the Secretary of

Interior. Finally, the Act authorized lower basin states to enter into a water apportionment agreement. The proposal was as follows: of the 7.5 MAF of water annually apportioned to the states, Nevada would receive 0.3 MAF, Arizona would receive 2.8 MAF, plus one-half of any excess water unapportioned by the Colorado River Compact, and California would receive 4.4 MAF, plus one-half of any excess water unapportioned by the Colorado River Compact.

The proposed apportionment was never settled upon by the Lower Basin States. In 1964, the United States Supreme Court Case of *Arizona v. California* (373 U.S. at 546) concluded that an agreement was not necessary because the Project Act authorized the Secretary of Interior to deliver water in accordance with the apportionment.

To complete the apportionment in California, the Secretary of Interior requested the State of California to prioritize water rights among the major water users. There were seven major water users which included the Palo Verde Irrigation District, the Yuma Project, the Imperial Irrigation District, the Coachella Valley Water District, the Metropolitan Water District, the City of San Diego, and the County of San Diego. On August 18 of 1931 the California Seven Party Agreement was signed by all the water users and went into effect. Table 8 shows the water apportionment priorities. Note that the first four California priorities total 4.4 MAF annually, of which the agricultural agencies are entitled to 3.85 MAF. As a result of the Colorado River Basin Project Act of September 30, 1968, the 4.4 MAF are also the quantities accorded priority over the Central Arizona Project.

After the California Seven Party Agreement, a draft contract for water delivery was submitted to the District by the Secretary of Interior. The draft contract called for extension of boundaries of the Imperial Irrigation District to include the Coachella Valley. The Coachella Valley desired to maintain its own organization.

The District and the Secretary of Interior negotiated another contract which was

approved by the District and the voters. Following approval, the District filed an action in the Supreme Court to validate the contract. The Coachella Valley objected to the validation. Following judgment in favor of the District and during Coachella Valleys' period of appeals, Imperial Valley and Coachella Valley negotiated in what came to be the Compromise Agreement of 1934. The result of this Agreement was that the District would have priority over Coachella in times of water shortage.

Table 8. Priority Established by the Seven Party Agreement for Water Apportionment

Priority/User		Apportionment	
1.	Palo Verde Irrigation District (For use exclusively upon 104,500 acres of valley land in and adjoining district)		
2.	Yuma Project (For use on California Division, not exceeding 25,000 acres of land)		
3a.	Imperial Irrigation District and Coachella Valley Water District (Lands served by All-American Canal in Imperial and Coachella Valleys)	3.85 MAF	
3b.	Palo Verde Irrigation District (For use exclusively on an additional 16,000 acres of mesa lands)		4.4 MAF ²
4.	Metropolitan Water District (For use on Southern California Coastal Plain)	0.55 MAF	
5a.	Metropolitan Water District (For use on Southern California Coastal Plain)	0.55 MAF	
5b.	City and County of San Diego ¹	0.112 MAF	0.962 MAF When Available
6a.	Imperial Irrigation District and Coachella Valley Water District		
6b.	Palo Verde Irrigation District (For 16,000 acres of mesa lands)	0.3 MAF	
Total within California		5.362 MAF	
¹ Apportionment merged with those of MWD in 1946. ² Quantity is the Basic Entitlement for California. Source: Water Conservation Plan, Imperial Irrigation District, 1985.			

Table 9. City of Brawley Current and Projected Water Supplies (AF/Y)

Water Supply Sources	2005	2010	2015	2020	2025
City imported surface water	16,790	33,600	33,600	33,600	33,600
Recycled Water	0	0	0	0	0
Total	16,790	33,600	33,600	33,600	33,600
Units of Measure: Acre-feet/Year					

Table 10. IID Current and Planned Annual Water Supplies

Agency	Water Supply Sources	2004	2010	2015	2020	2025
Imperial Irrigation District (IID)	Colorado River Water Rights	2,948,500 AF ¹	2,733,800 AF ¹	2,564,800 AF ¹	2,645,300 AF ¹	2,607,800 AF ¹
Units of Measure:		AF= Acre Feet				

¹ See Table 4.0.1. Imperial Irrigation District's water right is not a defined volume but rather a quantity of water to serve a defined area of land.

² Water Supply calculated using provisional water use data from *Diversions from Mainstream-Available Return Flow & Consumptive Use of Such Water Calendar Year 2000*, by U.S. Department of the Interior Bureau of Reclamation Lower Colorado River Operations, March 7, 2001, Provisional Water Use 2000.

³ Voluntary cap as per the proposed Quantification Settlement Agreement (QSA) for the Colorado River.

Reliability Planning

Law

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631 (c) Describe the reliability of the water supply and vulnerability to seasonal or climatic shortage, to the extent practicable.

10631 (c) For any water source that may not be available at a consistent level of use, given specific legal, environmental, water quality, or climatic factors, describe plans to replace that source with alternative sources or water demand management measures, to the extent practicable.

10631 (c) Provide data for each of the following:

(1) An average water year, (2) A single dry water year, (3) Multiple dry water years.

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

10632 (b) An estimate of the minimum water supply available during each of the next three-water years based on the driest three-year historic sequence for the agency's water supply.

Surface Water Quality

The surface waters of the Imperial Valley are quite different from what would be expected in a natural desert climate. The existence of most surface waters in the area is dependent primarily upon the inflow of irrigation water from the Colorado River via the All-American Canal. The use of this water for irrigation and other purposes has a significant effect on the quality of surface water.

There are three general categories which describe the surface water in Imperial County. These are freshwater, brackish water, and saline water. The freshwater (with TDS generally less than 1,000 ppm) include the All-American Canal and other

canals and laterals which deliver irrigation water to the agricultural fields within the County. The brackish waters (with TDS in the range of 2,000 to 4,000 ppm) include the Alamo River, New river and the agricultural drains that flow into these rivers or directly into the Salton Sea.

The Salton Sea represents the saline water category. Salinity concentrations are currently slightly higher than ocean water (the Salton Sea's current TDS is approximately 44,000 ppm). The surface waters in Imperial County thus pass through a salinity gradient from the Colorado River to the Salton Sea.

This regional salinity gradient exists because of the high evaporation of the Imperial Valley, high temperatures, low annual rainfall, and continual leaching of salts from irrigated areas. Evapotranspiration is water transported and evaporated from plants and surrounding soil surfaces. Although water is continually evaporated from the major canals, this evaporation represents a relatively minor increase in dissolved solids concentration because of the short residence times within the water conveyance system.

High evaporation rates from the irrigated fields substantially reduce the amount of water and increase the concentration of salt entering the drainage system. A 300% to 500% increase in total dissolved solids concentration is normal within the valley as water moves from the All-American Canal to the New and Alamo Rivers.

The change in salinity through the valley is extremely important because it affects the aquatic ecosystems and other beneficial uses of the surface waters. However, salinity is not the only water quality issue. The intensive irrigation in the valley presents the potential for the introduction of agricultural chemicals, such as pesticides and herbicides, into downstream waters. Field erosion and dredging activities also result in siltation in the New and Alamo Rivers and the Salton Sea. The bacteriological quality of these waters is also a concern because these streams receive locally generated municipal waste discharges, in addition to the

waste load entering the United States from Mexico.

Groundwater Quality

The shallow aquifers beneath the Imperial Valley are affected by the inflow of Colorado River waters, the rate of evaporation, the depth of the agricultural tile drains beneath farm lands, and seepage from drains and rivers. The Colorado River is probably the most important source of recharge into shallow ground water aquifers; approximately ten percent percolated to underlying aquifers. Canals, such as the All-American and the East Highline, contribute to recharge because they are unlined; they are sometimes up to 200 feet wide; the All-American Canal flows across many miles of sandy terrain; and the water surface of the canals are higher than the general groundwater levels.

Drainage from agricultural fields has resulted in local high salinity because of the leaching of salts from these fields. In other areas, mounds of good quality fresh water have resulted from seepage from irrigation canals. This has occurred significantly in the unlined major canals and the All-American, East Highline, and Coachella canals.

Recharge by underflow from tributary areas is small compared to recharge that comes from the Colorado River. Direct recharge from rainfall is very minor; however on higher alluvial slopes of the southwestern mountains, precipitation can be sufficient for recharge by direct infiltration. This also occurs from runoff, mainly in washes and drainages which discharge to the central part of the valley and the Salton Sea.

Waters within the shallow aquifers of the Salton Trough generally move at right angles to contours lines, and towards the Salton Sea. Based on pumping data and water studies on various wells, groundwater is from six to eight feet below the ground surface level throughout most of the Imperial Valley. Shallow groundwater quality is best on the eastern and western sides of the County. Significant

groundwater of good quality can also be found in the Ocotillo-Coyote Wells Groundwater Basin.

The deep water reservoir underlying Imperial Valley has been estimated at 1.1 billion to 3.0 billion acre feet, with total recoverable water estimated to be about twenty percent of the water in storage. Annual recharge is about 400,000 acre feet from various sources.

The deepest groundwater is in some cases is believed to be moderately altered ocean water. Above this level, the water may consist of residuals from prehistoric fresh water lakes that filled the Salton Trough. Waters at this level vary from low to moderate salinity. The next higher layers are high temperature, and in places highly saline waters.

In the central part of the Imperial Valley, the groundwater is of a higher salinity. Most wells had total dissolved solids concentrations of between 1,000 and 3,000 mg/L. The ionic composition of the water in the central part of the valley is similar to that of the East Mesa. However, as the total dissolved solids concentration increases, the ionic composition becomes more dominated by sodium chloride. The pH of these waters is usually slightly basic, with an occasional value less than seven.

In the western section of the valley, water quality varies widely. Almost all of the wells in Coyote Valley had total dissolved solids concentrations below 500 mg/L; however, West Mesa wells had levels between 1,800 and 5,200 mg/L.

Water Pollution

In order for an area to develop, it has to have sufficient resources. One of the most important and valuable resources is water. Water attracts people to develop where this resource is abundant and is put to beneficial use. However, not all water can be put to beneficial use if it is contaminated. A major problem with water quality that concerns many people is that of water pollution. There are a variety of issues that cause, or have potential to cause water pollution. In Imperial County, these issues include pesticide and fertilizer contamination of agricultural drains, geothermal developments, discharge from Mexico, and landfills in the County.

Agricultural Drains

Water pollution can be defined as any contamination of water that lessens its value to humans and nature. In the context of ecosystem function, pollution represents an imbalance of one or more elemental cycles. There are two broad classes of water pollution. One is point pollution which has its source in a well defined location, such as the pipe through which a factory discharges waste into a stream. The other is non-point pollution which has its source spread over large areas such as farms, grazing lands, construction sites, and the gardens, lawns, streets, and parking lots of cities.

There are two particularly disturbing aspects of groundwater pollution. One is that it can take years for some pollutants to move from the earth's surface into groundwater supplies. The other is that once the pollutants are in the ground, they can remain at problem concentrations for many decades. Studies performed by the Regional Board and U.S. Geological Survey indicate that drainage water in the Imperial Valley contains pesticides in quantities which often exceed the Environmental Protection Agency's criteria for protection of fish and wildlife. High levels of sediments and nutrients were also found.

For many years groundwater was assumed to be safe from chemical pollution

because contaminant movement was thought to be restricted to the top few inches of the earth's surface. During the late 1970's, scientists realized that certain kinds of pesticides, such as Dibromochloropropanes (DBCP), are capable of moving through the soil and mixing with groundwater. DBCP is a soil fumigant used to kill nematodes in the soil before planting a certain crop. In the Imperial Valley, the agricultural fields of lettuce, carrots, and tomatoes are sprayed with DBCP. There is potential for groundwater contamination from this process.

Water quality problems in drains have been attributed to discharge of irrigation surface runoff, such as tail water containing pesticide residues, fertilizers, and silt to receiving waters; drift of pesticides into adjacent waterways from aerial application; and mechanical dredging of drains, which in some reaches results in depletion of dissolved oxygen and suspension of chlorinated hydrocarbon pesticides.

Numerous governmental programs have been established to identify and correct existing pollution problems, as well as to prevent further groundwater contamination. Many of these programs are only a few years old and need to be continued for many years to be effective. If these programs are effective, water resources would be free of most pollutants detrimental not only to the environment but to the population as well.

Geothermal Developments

Extensive geothermal resources have been identified in several areas of the Imperial Valley. These are identified as Known Geothermal Resource Areas (KGRAs). Power plants are currently generating electricity from the hot water resources in the Salton Sea, the Heber KGRA, and the East Mesa KGRA. The fifteen existing power plants can generate about 300 megawatts, and it is estimated that the Imperial Valley resource could support approximately 2,750 megawatts of power production on a sustained basis.

Geothermal fluids in the largest and hottest field, the Salton Sea KGRA, contain

about twenty-five percent dissolved solids by weight. These fluids also contain marginally hazardous levels of arsenic, antimony, lead, mercury, zinc, and a large amount of other potential pollutants, including ammonia, boron, copper, lithium, selenium, strontium, and manganese.

The Heber and East Mesa KGRAs have fluids that are much cleaner by comparison, and contain less than two percent dissolved solids. Drilling has identified additional potential resources in the Brawley, Westmorland, and Salton City areas.

Geothermal power plants extract hot water through large wells drilled from 2,000 to 12,000 feet below the surface. The hot water is either allowed to boil to produce steam or passed through heat exchangers. Return flows of hot water from both processes are injected back into the geothermal reservoirs through separate wells.

The problems of contaminating the surface waters or nearby non-geothermal ground waters exists if the return flows are not injected to a significant depth; if they are injected under too much pressure; if they are injected into faults or fractures that connect to the surface; or if the injection wells leak. The potential for surface spills exists from pipeline failures or well blowouts.

In addition, land subsidence is a potential effect of geothermal developments. Currently, most of the extracted fluid is returned to the reservoir by injection, with the remainder being vented to the atmosphere as steam. This problem can be expected to increase as more power plants are built, although the natural subsidence of the Imperial Valley occurs at a rate of about one inch in ten years.

Discharges from Mexico

Mexico is probably the largest contributing factor to increasing water pollution in the Imperial Valley via the New River. The New River originates in Mexico, and flows northward across the International Boundary into Imperial County, California. The flow continues through the Imperial Valley and ultimately discharges into the Salton Sea. The primary purpose of the New River is to convey agricultural drainage in

the Imperial and Mexicali valleys to the Salton Sea. A corollary use of the New River is to convey treated community and industrial wastewaters. This corollary use is strictly controlled in the Imperial Valley by waste discharge requirements prescribed and enforced by the California Regional Water Quality Control Board. However, Mexico's corollary use of the New River is largely ignored and uncontrolled.

Mexico discharges raw and inadequately treated sewage, toxic industrial wastes, garbage and other solid wastes, animal wastes, and geothermal wastewaters out of the Mexicali area of Mexico and into the Imperial Valley. This process has continued for over forty years, resulting in the on-going pollution of the New River at the International Boundary. As Mexico's industry and population continue to grow, these problems have a high potential to increase if corrective measures are not taken.

Until August of 1983, the problem of Mexico polluting the New River had been the responsibility of United States Section of the International Boundary and Water Commission (IBWC), a joint United States/Mexico federal agency with responsibility for dealing with border water and sanitation problems between the two nations.

For over thirty years, the California Regional Water Quality Control Board has made several representations to the United States Commissioner on the IBWC to obtain corrections to the problem. Since 1975, the California Regional Water Quality Control Board has been monitoring water pollution of the New River to identify the pollutants actually coming from Mexico. This information has been presented to the United States Commissioner to aid and encourage Mexico in implementing corrective measures.

In August of 1980, Minute No. 264 to the Mexico-American Water Treaty was signed, which specified time schedules for completing work that was to result in a full cleanup of the river. In addition, minimum water quality standards were

specified for New River water quality at the International Boundary. Mexico has been in violation of practically all of the specified schedules and standards since Minute No. 264 went into effect in December of 1980. There is no evidence that Minute No. 264 has had any influence on actions in Mexico to clean up the river.

In July of 1983, the California Regional Water Quality Control Board conducted an investigation. The purpose of the investigation was to determine the type(s) and extent of waste discharges into the New River and its tributaries from Mexico so that possible corrective action could be considered and pursued. The investigation identified problems that must be addressed to obtain adequate corrections. These problems included:

1. City sewer lines which are not connected to the City's main sewer system discharging raw sewage to the river;
2. Breakdowns in the sewer system resulting in the discharge of raw sewage to the river;
3. Discharge of wastes to the river by septic tank pumpers;
4. Discharge of wastes to the river from adjacent unsewered residences;
5. Discharge of untreated industrial wastes to the river including highly toxic chemicals wastes, many of which are on the Environmental Protection Agency's list of 129 priority pollutants and some of which are carcinogens;
6. Inadequate treatment of sewage and industrial wastes by Mexicali, whose sewage treatment plant consists of nothing more than raw sewage lagoons;

7. Location of the City's garbage dump such that refuse is disposed of directly into the river water;
8. Discharges of untreated wastes from a slaughterhouse, dairy, and hog farms;
9. Discharges from residential hog and cattle pens located adjacent to the river and its tributaries; and
10. Discharge of geothermal wastes to the river.

In August of 1983, a United States/Mexican Agreement for protection and improvement of the environment in the border area was signed by the Presidents of Mexico and the United States. Under this agreement, responsibility for border environmental problems, including the New River pollution problem, was transferred from the International Boundary and Water Commission to the United States Environmental Protection Agency for the United States, and to the Mexican Secretariat de Desarrollo Urbano y Ecologia (SDUE) for Mexico. Since this transfer of responsibility, progress has been slow and it is questionable if the agreement has served any useful purpose in controlling pollution in the New River.

In April of 1987, Minute No. 274 to the Mexican-American Water Treaty was approved by the United States and Mexico. The minute provided for a \$1.2 million United States/Mexico jointly funded project to construct certain works in Mexico to reduce pollution in the New River. Although this project is just a step towards resolving the pollution problems of the New River, it sets a precedent for the involvement of the United States in the implementation of corrective actions within Mexicali.

According to the International Boundary and Water Commission of the United States, additional projects are needed to help reduce water pollution from Mexico.

Mexico and the United States are currently negotiating measures to solve the problem. Upon agreement between both governments, a new Minute will be approved and added to the Mexican-American Treaty to supersede Minute No. 274. The main goal of the new Minute would be to establish a long-term solution to the water pollution problem.

Aside from the New River, the Alamo River is polluted with contaminants as well. The Alamo River flows into Imperial County from Mexico and has low pollutant concentrations. Presently, the Alamo River is very small as it crosses into the United States and carries agricultural water coming from agricultural fields in Mexico. The main pollutants in the water are pesticides which get drained into the Alamo River during irrigation. However, the potential for polluting the Alamo River could increase not only from the pesticides contained in the water but from potential development at or near the Alamo River at the International Boundary. A new border crossing is to be constructed at or near the Alamo River as it crosses into the United States. This new border crossing could create an "urban sprawl" effect in this area of Imperial County, which would increase drainage into the Alamo River. The Alamo River currently has a small concrete culvert that passes underneath the All-American Canal which drains water coming from Mexico and eventually into the Salton Sea. Additional flows could clog the culvert and present a financial burden to Imperial County and lead to environmental health problems.

An option proposed by the California Regional Water Quality Control Board has been to shunt the Alamo River into a drainage system which would eventually drain into the New River before it crosses into the United States. In order for this to happen, both governments must agree. Presently, nothing has been settled but further negotiations are currently being reviewed between the United States and Mexico, in hopes to minimize potential problems that could result from the development of the new border crossing.

Landfills

Another potential problem that may contribute to the pollution or contamination of

groundwater is landfills. There are three different types of landfills within the County. These are classified as Class I, Class II, and Class III. A Class I landfill site is for the sole purpose of dumping hazardous wastes, a Class II landfill site is for dumping designated and/or special waste, and a Class III landfill site is for dumping non-hazardous wastes such as municipal waste.

Currently there are ten County-operated Class III disposal sites throughout Imperial County which accept non-hazardous wastes (Figure 3). Four of the County landfills, near Brawley, Hot Mineral Spa, Imperial, and Calexico, are under the ownership or control of the County; five, Holtville, Niland, Salton City, Ocotillo, and Palo Verde, are on Bureau of Land Management (BLM) property; and one, the Picacho landfill, serves the Winterhaven/Bard area and is located on land owned by the Quechan Indian Reservation.

In addition to the public sites, Imperial Republic Acquisitions operates a private Class III waste disposal facility in the unincorporated area northwest of the City of Imperial; Laidlaw Environmental Services operates a Class I facility west of the City of Westmorland; and Desert Valley Company operates a Class II solid waste disposal/storage site northwest of the City of Westmorland.

For more detailed information on solid and hazardous waste disposal sites, please refer to the Health Department, Imperial County Hazardous Waste Management Plan. The Imperial County Integrated Waste Management Plan is being prepared by the Department of Public Works, with a draft to be presented to the State Integrated Waste Management Board in January 1994.

Reliability

Reliability is a measure of a water service system's expected success in managing water shortages. To plan for long-term water supply reliability, planners examine an increasingly wide array of supply augmentation and demand reduction options to determine the best courses of action for meeting water service needs. Such options are generally evaluated using the water service reliability planning approach.

In addition to climate, other factors that can cause water supply shortages are water pollution, earthquakes and energy outages at the treatment and pumping facilities.

Reliability planning requires information about: (1) the expected frequency and severity of shortages; (2) how additional water management measures are likely to affect the frequency and severity of shortages; (3) how available contingency measures can reduce the impact of shortages when they occur.

Past Drought, Water Demand, and Conservation Information

California experienced a prolonged drought from 1987 through 1992. However, because the City uses reliable Colorado River water, the drought did not affect the City's water supply.

Frequency and Magnitude of Supply Deficiencies

Regional and State Drought Conditions

Imperial Irrigation District's present perfected and contract water rights are highly unlikely to be affected by the usual state and regional drought conditions. The water of the Colorado River is used by both the Upper Basin States (Colorado, New

Mexico, Utah, and Wyoming) and the lower basin states (Arizona, California and Nevada), as well as by Mexico. Assuming drought conditions on the Colorado River, California's 4.4 million acre-feet water apportionment is not likely to be impacted due to the massive storage quantities in the Colorado River reservoir system and the structure of water priorities. Arizona's Central Arizona Project must reduce its water diversions by one million acre-feet before any other lower basin water entitlement is affected. Additionally, Imperial Irrigation District's 2.6 million acre-feet of present perfected water rights theoretically protect its water users unless changed by future legislative action.

Imperial Irrigation District holds legal titles to all its water and water rights in trust for landowners within its service area (California Water Code §§20529 and 22437; *Bryant v. Yellen*, 447 U.S. 352, 371 (1980), fn.23.). While groundwater in the Imperial Unit is not used for commercial or major sources of water due to the high salt content, Imperial Irrigation District's Colorado River water supply is consistent and reliable.

The selected average or normal water year for this report is 1995 as it was the median water use year from 1994 through 1998. For the purposes of this plan, the "single dry water year" term is changed to "single reduced demand water year" as Imperial Irrigation District's senior water rights are such that drought conditions have never impacted its water supply. Thus for the purpose of this plan, 1992 was selected as the "single reduced demand water year" as this year had the lowest Imperial Irrigation District water usage during the 1989 to 1998 time period. In 1992, Imperial Irrigation District's available water supply was calculated to be 3,463,992 acre feet.

As illustrated in Table 4.0.1, Imperial Irrigation District does not have a quantified water right but instead is allotted the right to use flows within a 3.85 million acre-feet agricultural entitlement. Four agencies share this entitlement, and the right to use these flows is prioritized with the highest priority waster user diverting flows first, followed in order of priority by the other three agricultural entities. Thus, Imperial Irrigation District's third priority water right gives it the right to use whatever

flows it can put to reasonable and beneficial use after diversions by the Palo Verde Irrigation District and Yuma Project Reservation Division. Coachella Valley Water District holds the last priority to this agricultural entitlement, and is legally entitled to use whatever flows remain from the 3.85 million acre-feet allotment that have not already been diverted by the first three priority holders. Thus, in any year each of the agricultural water users' available water supplies can be determined by subtracting the annual diversions of the higher priority water users From the 3.85 million acre-feet agricultural entitlement. In 1992 Imperial Irrigation District's available water supply was calculated by subtracting Palo Verde Irrigation District and Yuma Project Reservation Division diversions (386,008 acre-feet cumulatively) from the 3.85 million acre-feet entitlement, for a 3,463,992 acre-foot supply. However, Imperial Irrigation District's 1992 consumptive use was only 2,572,659 acre-feet so the remaining 1,277,341 acre-feet of flows would have been available for Coachella Valley Water District and lower priority Colorado River contractors.

The Imperial Irrigation District's lowest water use years during the 1989 through 1998-time period, were 1991 and 1992 with 1992 being lower than 1991. The term "multiple dry water years" is changed to "multiple reduced demand water years." Historically, the most recent California drought period was from 1987 to 1992. For the ten year period from 1989 through 1998, the Imperial Irrigation District's lowest water use years were 1991, 1992, and 1993. See Table 4.4.1.

Table 11. IID Annual Water Supply Reliability

			Multiple Reduced Demand Water Years		
	Average/Normal Water Year (1995)	Single Reduced Demand Water Year (1992)	Year 1 (1991)	Year 2 (1992)	Year 3 (1993)
Water Use	3,070,582	2,572,659	2,898,963	2,572,659	2,772,148
Water Supply	3,373,233	3,463,992	3,375,173	3,463,992	3,457,909
Unit of Measure is Acre-Feet					

Decree accounting consumptive use from the *Compilation of Records in Accordance with Article V of the Decree of the Supreme Court of the United States in Arizona v. California Dated March 9, 1964* Calendar Years 1991, 1992, 1993, and 1995, by the U.S. Department of the Interior Bureau of Reclamation Lower Colorado Region.

2 Water Supply calculated using data from the *Compilation of Records in Accordance with Article V of the Decree of the Supreme Court of the United States in Arizona v. California Dated March 9, 1964* Calendar Years 1991, 1992, 1993, and 1995 by the U.S. Department of the Interior Bureau of Reclamation Lower Colorado Region.

For the purposes of this report and compliance with the Urban Water Management Planning Act, three years were selected to estimate a minimum annual water supply. The selected three years are 2001, 2002, and 2003. If during the years 2001, 2002, and 2003 there were a minimum water volume supply From the Colorado River, it would be 3.1 million acre-feet according to a voluntary self imposed cap proposed in the QSA.

Plans to Assure a Reliable Water Supply

An expanded water conservation program is one of several priorities supported by the City, and conservation programs such as school education, public information, and landscape design and water use standards are being implemented.

Imperial Irrigation District Reliability

Under a worst case water supply scenario the Imperial Irrigation District is confident that urban water users (which comprise less than two percent of its annual water deliveries) can be assured delivery of their required water supply. Due to its present perfected water rights and the relatively small water demand of non-agricultural

water users, the Imperial Irrigation District would not reduce or cut back urban water deliveries even in years of reduced deliveries. Since its inception in 1911, the Imperial Irrigation District has never been denied the right to divert the amount of water it has requested for agricultural purposes and other beneficial uses.

Three Year Minimum Water Supply

The City forecasts no supply shortage at any point in the future.

Imperial Irrigation District Supply

It is unlikely that the urban water supply of Imperial Irrigation District would ever be affected, even under shortage or drought conditions on the Colorado River. Urban water use in the Imperial Unit makes up less than two percent of the total water delivered by the Imperial Irrigation District. Under a worst case water supply scenario, the Imperial Irrigation District is confident it can meet the demands of urban water users.

Due to the high quality of the Imperial Irrigation District's water rights, Colorado River flows, and the storage facilities on the Colorado River it is highly unlikely that Imperial Irrigation District's water supply will be affected, even in dry years. See Water Supply Section, pages 15 through 20, for water right details. The entire southern California region, both urban and agricultural, would be in a severe drought emergency before the Imperial Valley's water supply is threatened. Historically, the Imperial Irrigation District has never been denied the right to divert the amount of water it has requested for agricultural irrigation and other beneficial uses.

In the event that there is a water shortage in the Lower Colorado River Basin, the Imperial Irrigation District/San Diego County Water Authority water transfer agreement states that both agencies will share, on a pro-rata basis, any reductions in water to Imperial Irrigation District should a shortage declaration by the Secretary of the Interior for the Lower Colorado River Basin affect the Imperial Irrigation

District's water conservation and transfer programs. When the amount of water in usable storage in Lake Mead is less than 15 million acre-feet and the unregulated inflow into Lake Powell is forecasted to be less than 8.8 million acre-feet, the Imperial Irrigation District and the San Diego County Water Authority have agreed to meet and confer to discuss a supplemental water transfer agreement in anticipation of the shortage.

Should operating conditions on the Colorado River indicate Imperial Irrigation District may be impacted by reductions in water deliveries, the Imperial Irrigation District will notify all of its water users by mail and will conduct an educational outreach program in conjunction with the local media and municipal water systems. The notice will request all water suppliers, and in particular residential, industrial, and commercial water users, to conserve water on a voluntary basis. Urban water suppliers will be responsible for notifying their customers and implementing their own voluntary water conservation measures and programs.

Urban water supply reductions in the Imperial Unit are not likely to occur during the next twenty years. Action stages are noted in this plan in order to comply with California's Urban Water Management Planning Act requirements and have not been approved by any of the agencies participating in this plan. Urban water supply shortage stage one is voluntary, has cut back conditions of less than 15 percent, and is estimated to provide up to 79 percent of the reduction goal for urban water suppliers. Urban water supply shortage stage two is voluntary, has cut back conditions of 15 percent to less than 25 percent, and is estimated to provide 7 to 12 percent of the reduction goal for urban water suppliers. Urban water supply shortage stage 3 is mandatory, has cut back conditions of 25 percent to less than 35 percent, and is estimated to provide the remainder of any reduction goals for urban water suppliers. Mandatory provisions to reduce individual urban consumer water use are beyond the jurisdiction of the Imperial Irrigation District. Any urban water use reductions or restrictions are the responsibility of individual urban water suppliers who treat and distribute water within the Imperial Unit. This includes Water Shortage Emergency Response Emergency actions and procedures to be

taken by Imperial Irrigation District Water Department staff during an emergency or time of disaster are described in the Emergency Preparedness Plan.

Transfer or Exchange Opportunities

Law

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631 (d) Describe the opportunities for exchanges or transfers of water on a short-term or long-term basis.

Quantification Settlement Agreement (QSA)

Taking the initiative to resolve a number disputes, at the end of 1999 the Boards of Directors of the Imperial Irrigation District, Coachella Valley Water District (CVWD), and MWD approved the Key Terms for Quantification Settlement among the State of California, Imperial Irrigation District, Coachella Irrigation District, and Metropolitan Water District of Southern California as the basis for obtaining public input regarding Colorado River water use in California. From this input and subsequent negotiations, the parties drafted a series of legal agreements that together comprised the basis for reallocating a portion of Colorado River water and implementing certain practices during a quantification period of 45, and up to 75, years. The Quantification Settlement Agreement (QSA) is designed to resolve differences among Colorado River contractors regarding water allocations, enhance the reliability of Colorado River supplies to each of the participating agencies, and provide part of the mechanism for California to limit its consumptive use of Colorado River water to its 4.4 million acre-feet (MAF) annual apportionment.

Throughout 2001, 2002 and most of 2003, the Imperial Irrigation District, CVWD, and MWD engaged in QSA negotiations with the State of California and the US Bureau of Reclamation. On October 10, 2003, the Colorado River Water Delivery Agreement (Federal Agreement) was signed by the US Secretary of the Interior, the CVWD, Imperial Irrigation District, MWD and SDCWA. On that date, the QSA and Related Agreements were also signed by the US Secretary of the Interior and/or representatives of various Indian tribes, the US Bureau of Reclamation, SDCWA, CVWD, MWD, and the Imperial Irrigation District.

The QSA and Federal Agreement (Agreements), which generally extend for a 45-year period with provisions to extend up to 75 years (through 2047, or to 2077), consist of a series of water transfers, water exchanges, water conservation measures, and other changes affecting the water budgets of Imperial Irrigation District, CVWD, MWD, San Luis Rey Indian Settlements, and various Indian PPRs.

The key water conservation components of the QSA are the concrete lining of portions of the Coachella and All-American Canal, and the Imperial Irrigation District water conservation and transfer program.

Imperial Irrigation District Water Conservation and Transfer Program

Under the terms of the QSA, Imperial Irrigation District's water rights remain unchanged; however, to mitigate impacts to the Salton Sea, instead of a strategy that was to be based solely on conservation, Imperial Irrigation District was required to implement a fallowing program for the agreement's first 15 years. By year fifteen and through the duration of the transfer, system improvements such as canal interceptors, mid-lateral reservoirs, and automation along with on-farm improvements such as tailwater recovery systems and micro-irrigation are expected to provide the water needed for the transfer.

In 1989, the Imperial Irrigation District entered into a water conservation and transfer agreement with Metropolitan Water District of Southern California (MWD). The Imperial Irrigation District/Metropolitan Water District of Southern California Water Conservation Agreement (IID/MWD Water Conservation Agreement) now conserves approximately 108,500 acre-feet of water annually. The conserved water is transferred to MWD and its urban water users in Los Angeles, San Diego, and the surrounding areas in southern California. In 1997, the Imperial Irrigation District and the San Diego County Water Authority (SDCWA) entered into a long-term conservation and water transfer agreement, which, if implemented, will benefit all Californians. The Imperial Irrigation District/San Diego County Water Authority Water Conservation and Transfer Agreement provides for the transfer to SDCWA of up to 200,000 acre-feet per year of water conserved within the Imperial Irrigation

District service area, plus an additional optional amount of up to 100,000 acre-feet per year.

Under this agreement, the Imperial Irrigation District and its agricultural water users will conserve water and transfer the quantity conserved to SDCWA for at least 45 years. Either agency may extend the contract for another 30 years beyond the initial term. Deliveries in the first year of program implementation will total 20,000 acre-feet and increase in 20,000 acre-feet increments annually for a minimum 130,000 acre-feet transfer or up to a maximum 200,000 acre feet transfer. SDCWA would pay an amount for the water that equals the cost of conserving the water plus an incentive to encourage participation by farmers, along with an index to adjust the cost of the water in future years based on market prices. Additionally, the water must result from 'extraordinary conservation,' not land fallowing (which is contractually prohibited as a method of conservation).

Implementation of the Imperial Irrigation District/San Diego County Water Authority water conservation and transfer is contingent upon several factors, such as the satisfactory completion of 'wheeling' (transportation and/or exchange) arrangements between San Diego County Water Authority and Metropolitan Water District of Southern California, the completion and certification of all required environmental documents, issuance of an necessary permits and approvals by state and federal authorities, environmental mitigation costs that do not exceed predefined caps outlined in the transfer agreement, and adequate farmer participation levels to ensure that at least 130,000 acre-feet of the conserved water is generated by on-farm conservation efforts. The balance of the 200,000 acre feet can be made up with Imperial Irrigation District system improvements.

In 1999 the Boards of Directors of the Imperial Irrigation District, Coachella Valley Water District, and Metropolitan Water District of Southern California approved the *Key Terms for Quantification Settlement among the State of California, Imperial Irrigation District, Coachella Irrigation District, and Metropolitan Water District of*

Southern California as the basis for obtaining public input regarding a Quantification Settlement Agreement (QSA). From this input and negotiations the QSA parties are drafting a series of legal agreements that together will comprise a QSA. In general, the QSA is a proposed agreement to reallocate a portion of Colorado River water and implement certain practices during the quantification period (which could last from 35 to 75 years) as a means of resolving differences among Colorado River contractors regarding water allocations. The QSA is designed to enhance the reliability of Colorado River supplies to each of the participating agencies and provide part of the mechanism for California to limit its diversions of Colorado River water to its 4.4 million acre-feet per year apportionment. The QSA includes provisions that would:

1. Voluntarily limit the share of Colorado River water that may be diverted and put to beneficial use by Coachella Valley Water District and Imperial Irrigation District.
2. Facilitate various conservation and transfer agreements.
3. Modify existing conservation agreements to fit within the terms of the QSA.
4. Establish other conditions that must be in place before the approval of the QSA.

The quantification of agency specific diversion rights and implementation of voluntary conservation measures and water transfers/exchanges by participating agencies would result in the annual, collective transfer of water from agricultural uses, principally in the Imperial Irrigation District service area, to other participating agencies. Water conservation would be achieved through a variety of means, including on-farm and system improvement measures within the Imperial Irrigation District service area and main canal linings.

Under the QSA, Imperial Irrigation District would agree to limit its Priority 3a diversion of Colorado River water to 3.1 million acre-feet per year. This consensual limitation constitutes a forbearance of Imperial Irrigation District's right to divert, for

beneficial use, up to the entire balance (after Priorities 1 and 2) of the 3.85 million acre-feet per year amount allocated in the aggregate to Priorities 1, 2, and 3. This forbearance increases the certainty of water availability to agencies with lower priorities. Water conserved within Imperial Irrigation District's service area would be available for use by Coachella Valley Water District, Metropolitan Water District of Southern California, or San Diego County Water Authority. If the QSA is approved and implemented, portions of the Imperial Irrigation District/ Metropolitan Water District of Southern California and Imperial Irrigation District/San Diego County Water Authority water conservation and transfer agreements would be modified to reflect changes in diversion point and recipient of some of the conserved water, but the cumulative total volumes of the transfers would not be affected.

Water Use Provisions

Law

10631. A plan shall be adopted in accordance with this chapter and shall do all of the following:

10631 (e) (1) Quantify, to the extent records are available, past and current water use, over the same five-year increments described in subdivision (a), and projected water use, identifying the uses among water use sectors including, but not necessarily limited to, all of the following uses:

(A) Single-family residential; (B) Multifamily; (C) Commercial; (D) Industrial; (E) Institutional and governmental; (F) Landscape; (G) Sales to other agencies; (H) Saline water intrusion barriers, groundwater recharge, or conjunctive use, or any combination thereof; and (I) Agricultural.

(2) The water use projections shall be in the same 5-year increments to 20 years or as far as data is available.

Past, Current and Projected Water Use

Table 7 illustrates Past, Current, and Projected Water Use 2000 – 2025 in acre-feet per year, and Table 6 illustrates Past, Current, and Projected Water Use 2000 - 2025 in number of customers per year. Population increases in the City of Brawley for the years between 2005 and 2025 are estimated to be 3.7% compounded annually. The population projections stem from incoming development and industry to the City of Brawley. The number of connections is estimated to increase by 3.7% per year per the population projections.

Table 12. Number of Connections by Customer Type – City of Brawley						
Customer Type	2000	2005	2010	2015	2020	2025
Single family res.	3,856	4,344	4,505	4,671	4,844	5,023
Multi-family residential	509	439	455	472	490	508
Commercial/Institutional	317	370	384	398	413	428
Industrial		7	7	8	8	8
Landscape Irrigation						
Other		123	128	132	137	142
Brawley Total	4,682	5,283	5,478	5,681	5,891	6,109

Table 13. Estimated Past, Current and Projected Annual Water Use – City of Brawley						
Water Use Sectors	2000	2005	2010	2015	2020	2025
Single family residential	620	1,059	816	968	1,147	1,359
Multi-family residential	1,241	1,351	1,601	1,897	2,248	2,664
Commercial/Institutional	97	192	148	176	208	246
Industrial	380	613	487	577	684	810
Landscape Irrigation	267	402	443	525	622	737
Other	139	130	165	195	231	274
Brawley Total	2,743	3,089	3,660	4,338	5,140	6,091
Unit of Measure: Million Gallons						

The existing City's water billing system identifies customers' categories, so that accounts can be classified by use class and can identify each customer by sector and usage category. The total amount of water delivered into the system, the Brawley Total, is metered at the water treatment plant and is shown in Table 13.

The breakdown of usage for single family, multi-family, commercial, industrial and landscaping is estimated because the users are billed on a flat rate. Brawley is in the process of installing meters in the City. Residential meters will be installed by May 2006. Multi-family, commercial and Industrial meters are scheduled to be completed by May 2007.

Residential Sector

In the City of Brawley, residential customers average 3.3 persons per connection. Total system per capita water use averages 347 gallons per capita per day. The City classifies residential accounts as either single family or multi-family.

Commercial Sector

The City has a complex mix of commercial customers, ranging from markets, restaurants, insurance offices, beauty shops, and gas stations to office buildings, regional shopping centers, and high-volume restaurants, motels and other facilities serving the visitor population. The sector is growing at about 3.2% per year, driven by the need for services by the increasing population and by increasing tourism.

This trend is expected to continue through 2025.

Industrial Sector

The City currently has a major industrial customer – the Brawley Beef Plant. Additional industrial customers are expected. The Brawley Beef Plant uses approximately 1,200,000 gallons of water per day on average.

Institutional/Governmental Sector

The City has a stable institutional/governmental sector, primarily local, county, State and Federal government facilities, schools, visitor serving public facilities, and a public hospital. This sector is expected to keep pace with the growth of the city.

Agricultural Sector

The City does not supply raw water for agricultural use. Water is supplied by the Imperial Irrigation District for agricultural purposes.

Imperial Irrigation District Water Use

The Imperial Irrigation District provides wholesale water service. Demand for water in the Imperial Unit service area is divided into three basic categories: agricultural, municipal, and industrial. Historically the Imperial Irrigation District has delivered 98.2 percent of its annual flows to agricultural water users, 1.2 percent to municipalities, and 0.6 percent for industrial purposes.

Raw water use by the Imperial Irrigation District is shown in Table 14. The Imperial Irrigation District's consumptive use values, listed in Table 14, include the total use of raw water in the Imperial Unit. These consumptive use values include agriculture, small acreage, service pipes, municipalities, industrial, losses and unaccounted for raw water. There is no available data that completely distinguishes between these uses of raw water.

Table 14. IID Annual Water Use (Historical, Projected and Water Conservation and Transfer Programs/Projects)

Water Use	1995	2000	2005	2010	2015	2020	2025
Consumptive Use (includes agricultural, service pipes, municipalities, industrial, and unaccounted losses)	3,070,582	3,112,951	2,910,000	2,722,300	2,677,300	2,652,300	2,627,500
Water Conservation & Transfers							
IID/MWD Transfer ^{4&5}	74,570	109,460	110,000	110,000	110,000	110,000	110,000
IID/San Diego County Water Authority Transfer	0	0	80,000	180,000	200,000	200,000	200,000
IID/Coachella Valley Water District Transfer	0	0	0	20,000	45,000	70,000	70,000
AAC Lining Conservation (MWD)	0	0	0	56,200	56,200	56,200	56,200
AAC Lining Conservation (San Luis Rey Indian Water Rights Settlement Act)	0	0	0	11,500	11,500	11,500	11,500
Total (Acre-Feet)	3,145,152	3,222,411	3,100,000	3,100,000	3,100,000	3,100,000	3,100,000
Units of Measure:	Acre-Feet						

Decree accounting consumptive use data from Compilation of Records in Accordance with Article V. of the Decree of the Supreme Court of the United States in Arizona v. California Dated March 9, 1964 for Calendar Years 1990 and 1995, by the U.S. Department of the Interior Bureau of Reclamation Lower Colorado River Region, pp. 14-17.

1 Estimated using provisional water use data from Diversions from Mainstream-Available Return Flow & Consumptive use of Such Water Calendar Year 2000, by U.S. Department of the Interior Bureau of Reclamation Lower Colorado River Operations, March 7, 2001, Provisional Water Use 2000.

2 Voluntary cap as per the proposed Quantification Settlement Agreement (QSA) for the Colorado River, value closes "Total" to 3,100,000 acre-feet.

3 Imperial Irrigation District All American Canal (38 Years), p. 1.

4 Key Terms for Quantification Settlement among the State of California, IID, CVWD, and MWD, October 15, 1999 p. 4.

5 Agreement for Transfer of Conserved Water by and between Imperial Irrigation District, a California irrigation district ("IID"), and San Diego County Water Authority, a California county water authority ("Authority"), 1998. Article 3 Quantity, p. 13. At full implementation project savings are between 130,000 and 200,000 acre-feet.

6 Key Terms for Qualification Settlement among the State of California, IID, CVWD, and MWD, October 15, 1999, pp. 6 & 8.

7 Key Terms for Quantification Settlement among the State of California, IID, CVWD, and MWD, October 15, 1999, pp. 10 & 11.

Water distribution systems lose water during distribution for several reasons. Specific water distribution losses depend on the type of distribution system. A piped water distribution system can lose water due to pipe failures or leaks. Open channels, ponds, reservoirs, and water basins can lose water from seepage through the soil, surface evaporation into the air, and plant consumption.

An open channel, gravity flow water distribution system has operational discharges. Operational discharges are excess flows discharged from a channel into another channel or drain. Operational discharges can result from: carriage water that is required to fill and empty the reaches of sloping channels; excess water delivered to a channel to ensure adequate and constant delivery to the water users; increases in water user flexibility for water ordering and delivery scheduling; and terminating water

deliveries during rainfall events, storm runoff, and flood flows.

The Imperial Irrigation District has an open channel gravity flow water distribution system. Its water distribution system losses result from three major conditions: seepage, operational discharges, and evaporation. The Imperial Irrigation District's water distribution system losses have been reduced through the years by numerous water conservation and demand management programs and projects. The demand management programs and projects are described in detail in the Imperial Irrigation District Demand Management Section of this plan.

Agricultural Water Use in the Imperial Valley

There are over 120 types of crops grown in the Imperial Valley. Most relevant to the Water Element is an examination of the various crop types, the acreage dedicated to each and the demand for irrigation water generated by each crop per acre of cultivation. Water demand is provided below on a "net consumption" basis and is based upon historical acreage and water use data. Major water consuming crops include alfalfa (5.20 ac.ft./acre), asparagus (4.12 ac.ft./acre), cotton (3.45 ac.ft./acre), and tomatoes (2.23 ac.ft./acre). More efficient crops include carrots (1.21 ac.ft./acre), squash (1.58 ac.ft./acre), and barley (1.64 ac.ft./acre). The historical trend indicates that approximately 525,000 acres are in cultivation over the year and that crops grown on this acreage consume approximately 1,771,000 acre feet per year. Table 2 shows the historical average of individual crop acreage and water use in Imperial Valley over a ten year period.

Table 15. IID Crop Acreage and Water Use in Imperial Valley (Historical Average)

Crop	Area (Acres)	Water Use (af)
Garden Crops		
Broccoli	7,000	11,480
Carrots	12,000	14,540
Lettuce	35,000	47,017
Cantaloupes	15,000	33,213
Watermelons	5,000	10,929
Other Melons	4,000	8,903
Onions	10,000	17,725
Squash	1,000	1,578
Tomatoes	3,000	6,695
Vegetables (misc.)	5,000	8,083
Field Crops		
Alfalfa	185,000	961,692
Barley	1,000	1,650
Bermuda Grass	15,000	52,125
Cotton	40,000	137,900
Rye Grass	4,000	9,500
Sorghum	3,000	7,330
Sudan Grass	20,000	47,500
Sugar Beets	35,000	122,208
Wheat	105,000	204,488
Miscellaneous	2,000	4,695
Permanent Crops		
Asparagus	3,000	12,355
Citrus Fruits	2,000	7,163
Duck Ponds (feed)	8,000	24,000
Jojoba	3,000	10,745
Trees and Vines	1,000	3,582
Miscellaneous	1,000	3,982
Source: Water Requirements and Availability Study. Prepared by Parsons Water Resources, Inc. for the IID. November 1985.		

Agriculture is the most highly water consumptive use in Imperial County. Approximately ninety-eight percent of the water diverted to Imperial County from the Imperial Irrigation District is used for agricultural purposes. Imperial Irrigation District supplies more than 2,500,000 acre-feet of water annually for primarily agricultural purposes to its customers in Imperial County, which contains over 500,000 acres of irrigated farmland.

Supply and Demand Comparison Provisions

Law

10635 (a) Every urban water supplier shall include, as part of its urban water management plan, an assessment of the reliability of its water service to its customers during normal, dry, and multiple dry water years. This water supply and demand assessment shall compare the total water supply sources available to the water supplier with the total projected water use over the next 20 years, in five-year increments, for a normal water year, a single dry water year, and multiple dry water years. The water service reliability assessment shall be based upon the information compiled pursuant to Section 10631, including available data from the state, regional or local agency population projections within the service area of the urban water supplier.

Supply and Demand Comparison

The new Brawley Water Treatment Plant went on line in June 2000. The treatment facility is designed to produce 15 million gallons per day with the capability to expand to 30 million gallons per day. The treatment incorporates several processes including pumping, chemical injection, primary sedimentation, flocculation, filtration, and finish water storage to ensure the city is provided with a reliable supply of safe, clean drinking water. Currently the treatment facility is producing an average of 8.5 million gallons per day of potable water (9,479 acre-feet per year). It is anticipated that the water treatment plant expansion will take place by 2015, which will bring the capacity of the water plant to 33,600 acre-feet per year. Total supply is regulated only by the total amount of water that can be treated at the water treatment plant.

Table 16 compares current and projected water supply and demand. It is important to note that the City of Brawley has sufficient water to meet its customers' needs, through 2025 during Single Dry year and Multiple Dry years.

Table 16. Projected Supply and Demand – City of Brawley					
	2005	2010	2015	2020	2025
Supply totals	16,800	16,800	33,600	33,600	33,600
Demand totals	9,479	11,232	13,313	15,774	18,693
Difference (surplus)	7,321	5,568	20,287	17,826	14,907
Units of Measure: Acre-feet/Year					

Imperial Irrigation District Supply and Demand

The selected average or normal water year for this report is 1995. The Imperial Irrigation District's yearly median water use volume for 1994 through 1998 is equal to 1995's volume of water. For the purposes of this plan the "single dry water year" term is changed to "single reduced demand water year." Increased water demand in the Imperial Unit will be offset in future years with increased water conservation measures.

The 1992 annual water use volume was lower than the 1991 annual water use volume. The Imperial Irrigation District's lowest water use year during the 1989 through 1998 time period, was the years 1991 and 1992. Table 5.2.1 lists the supply reliability and demand comparison for a single reduced demand water year and for multiple reduced demand water years.

Table 17. Supply and Demand Comparison – Normal Year - IID					
	Avg./Normal Water Year	Single Reduced Demand Water Year	Multiple Reduced Demand Water Years		
			Year 1 (1991)	Year 2 (1992)	Year 3 (1993)
Imperial Irrigation District Supply Totals	3,373,233	3,463,992	3,375,173	3,463,992	3,457,909
Imperial Irrigation District Demand Totals	3,070,582	2,572,659	2,898,963	2,572,659	2,772,148
Difference	302,651	891,333	476,210	891,333	685,761
Unit of Measure is Acre-feet/Year					

1 Water supply calculated using data in the *Compilation of Records in Accordance with Article V of the Decree of the Supreme Court of the United States in Arizona v. California Dated March 9, 1964*, Calendar Years 1991, 1992, 1993, and 1995 by the U. S. Department of the Interior Bureau of Reclamation Lower Colorado Region.

2 Decree accounting consumptive use from the *Compilation of Records in Accordance with Article V of the Supreme Court of the United States in Arizona v. California Dated March 9, 1964* Calendar Years 1991, 1992, 1993, and 1995, by the U. S. Department of the Interior Bureau of Reclamation Lower Colorado Region.

Water Demand Management Measures

Law

10631 (f) Provide a description of the supplier's water demand management measures. This description shall include all of the following:

(1) A description of each water demand management measure that is currently being implemented, or scheduled for implementation, including the steps necessary to implement any proposed measures, including, but not limited to, all of the following...

City of Brawley Demand Management

The City of Brawley prepared a Water Conservation Program in June 2001 (See Appendix G). The Final Report describes the water conservation goals, implementation strategies and evaluation of the conservation measures.

The City prepared, adopted and implemented a Water Master Plan in 1999 to identify planned domestic water treatment and distribution facilities required to accommodate planned growth in Brawley. The Water Master Plan addresses the adequacy of the existing system to meet the water needs of the existing community, improvements to mitigate existing deficiencies, and improvements to provide water service to future development projects. The capacity of the facilities recommended in the Water Master Plan is based on buildout of the land uses and development intensity identified in the General Plan Land Use Element.


The City encourages water conservation throughout Brawley in the following ways:


- The City purchases the flyer "5 Basic Ways to Conserve Water", by the American Water Works Association (1989), and makes it available at public places.
- City staff surveys the City streets to ensure that water is not being wasted by excessive creation of nuisance water during watering. When excessive nuisance water is encountered, the City writes the property owner a letter

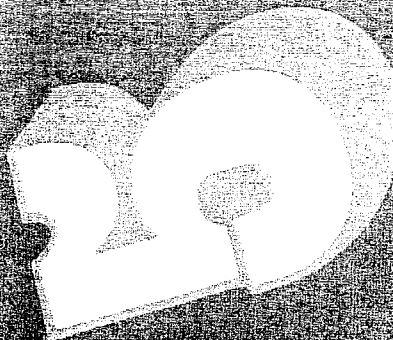
asking for assistance in reducing the runoff. There is a City ordinance (Sec. 19.24-1 making it unlawful and a misdemeanor for any person to run or drain or allow to run or drain any water onto or into any street or alley in the City.

- Require new development and rehabilitation of existing development to make maximum use of water conservation techniques, including low-flush toilets, flow restriction devices, and water conserving appliances.
- Support the development of strategies to increase reclaimed water production and identify potential reclaimed water users and required delivery infrastructure.
- Encourage the use of drought resistant plant species in ornamental landscaping for existing and proposed land uses including parks.
- Work with the Brawley Unified School District to establish water conservation educational programs and provide water conservation literature at public facilities in Brawley.

Just five suggestions. But they are the basic elements of a sound, reasonable, and effective water conservation program for you, your family, your friends — everyone. Don't let water go to waste. Do your part to use water wisely.


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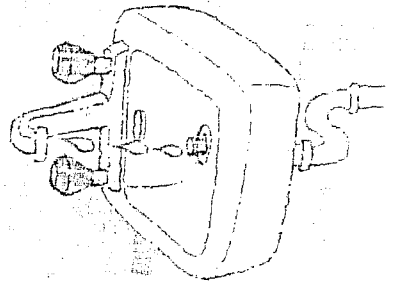
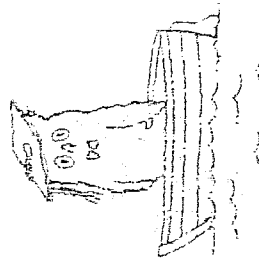


BASIC WAYS TO CONSERVE WATER

Be Water-Wise

Everyone wants to help conserve valuable resources. And water is one of the most valuable there is. We couldn't live without it.

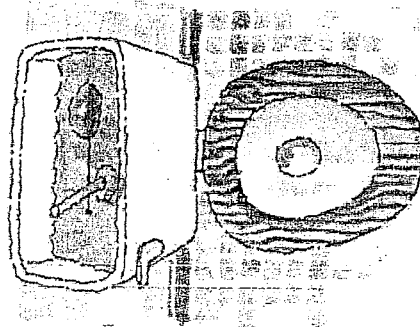
But what can an individual — or a single family — do to help? The answer is in these five simple suggestions. Follow them and you'll be water-wise, not wasteful.



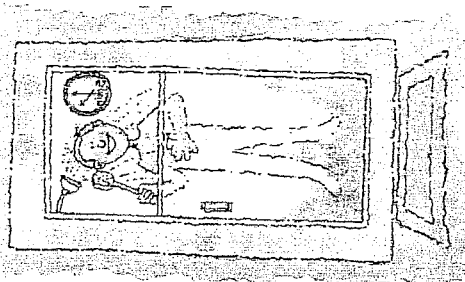
Check your home for leaks. A single home faucet can waste 15 gallons of water a day. Fix it and your water bill will rise a cent.

Figure 4 – 5 Ways to Conserve Water Flyer

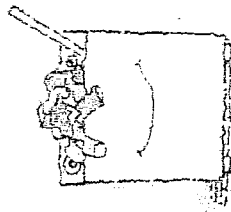
Put a bit of food coloring in each toilet tank. Without flushing, watch for a few minutes to see if the color shows up in the bowl. It's not uncommon to lose up to 100 gallons a day from one of these otherwise invisible toilet leaks. And that's more than 30,000 gallons a year!



Don't shower too long or fill the tub too full. Five minutes for showering and about five inches in the tub is plenty.



Try to use automatic dish and clothes washing machines with full loads only. Even when the machines feature short cycles, you're being more efficient with your water when there are enough dirty things for a full load.



Most importantly, water your lawn and garden with good sense. Do it early or late, not in midday heat. Avoid windy days. See that water goes where it should, not on sidewalks or driveways. Stick a spade in the ground now and then to see that water is getting down deep. A good soaking encourages good root systems. But remember this: A single lawn sprinkler spraying five gallons per minute uses 50% more water in just one hour than a combination of ten toilet flushes, two 5-minute showers, two dishwashing loads and a full load of clothes. So be sensible. Check with local lawn garden experts for best results, and check head watering regulations.

In addition, the city is moving forward toward an aggressive agenda to implement and or enhance the following programs:

- Install water meters on all industrial, commercial and residential acres.
- Implement the existing water conservation program.
- Identify and test all backflow assemblies.
- Develop a valve exercise and replacement program.
- Implement a Dead-end flushing program.

The water line replacement started in December 2001 with a budgeted amount of 5.6 million dollars. This phase will replace all existing four and 6-inch cast iron mains with an 8-inch PVC water distribution line. It is anticipated that the city will be replacing 52,929 linear feet of distribution water mains within the next three years. This will provide increased distribution pressure throughout the city and will increase fire flow volumes for fire protection.

Imperial Irrigation Demand Management

It is unlikely that the urban water supply of Imperial Irrigation District would ever be affected, even under shortage or drought conditions on the Colorado River. Urban water use in the Imperial Unit makes up less than two percent of the total water delivered by the Imperial Irrigation District. Under a worst case water supply scenario, the Imperial Irrigation District is confident it can meet the demands of urban water users.

Due to the high quality of the Imperial Irrigation District's water rights, Colorado River flows, and the storage facilities on the Colorado River it is highly unlikely that Imperial Irrigation District's water supply will be affected, even in dry years. See Water Supply Section, pages 15 through 20, for water right details. The entire southern California

region, both urban and agricultural, would be in a severe drought emergency before the Imperial Valley's water supply is threatened. Historically, the Imperial Irrigation District has never been denied the right to divert the amount of water it has requested for agricultural irrigation and other beneficial uses.

In the event that there is a water shortage in the Lower Colorado River Basin, the Imperial Irrigation District/San Diego County Water Authority water transfer agreement states that both agencies will share, on a pro-rata basis, any reductions in water to Imperial Irrigation District should a shortage declaration by the Secretary of the Interior for the Lower Colorado River Basin affect the Imperial Irrigation District's water conservation and transfer programs. When the amount of water in usable storage in Lake Mead is less than 15 million acre-feet and the unregulated inflow into Lake Powell is forecasted to be less than 8.8 million acre-feet, the

Imperial Irrigation District and the San Diego County Water Authority have agreed to meet and confer to discuss a supplemental water transfer agreement in anticipation of the shortage.

Should operating conditions on the Colorado River indicate Imperial Irrigation District may be impacted by reductions in water deliveries; the Imperial Irrigation District will notify all of its water users by mail and will conduct an educational outreach program in conjunction with the local media and municipal water systems. The notice will request all water suppliers, and in particular residential, industrial, and commercial water users, to conserve water on a voluntary basis. Urban water suppliers will be responsible for notifying their customers and implementing their own voluntary water conservation measures and programs.

Urban water supply reductions in the Imperial Unit are not likely to occur during the next twenty years. Action stages are noted in this plan in order to comply with California's Urban Water Management Planning Act requirements and have not been approved by any of the agencies participating in this plan. Urban water supply shortage stage one is voluntary, has cut back conditions of less than 15 percent, and

is estimated to provide up to 79 percent of the reduction goal for urban water suppliers. Urban water supply shortage stage two is voluntary, has cut back conditions of 15 percent to less than 25 percent, and is estimated to provide 7 to 12 percent of the reduction goal for urban water suppliers. Urban water supply shortage stage 3 is mandatory, has cut back conditions of 25 percent to less than 35 percent, and is estimated to provide the remainder of any reduction goals for urban water suppliers. Mandatory provisions to reduce individual urban consumer water use are beyond the jurisdiction of the Imperial Irrigation District. Any urban water use reductions or restrictions are the responsibility of individual urban water suppliers who treat and distribute water within the Imperial Unit.

Future and current Imperial Irrigation projects and programs

Water Conservation

The Imperial Irrigation District (IID) has initiated many water conservation programs in Imperial County. They have also participated in various programs in cooperation with governmental agencies. In addition, the District has offered public education programs and has encouraged innovative on-farm practices in the Imperial Valley. Its commitment to efficient regional water use management was most clearly demonstrated by the Water Conservation Agreement between Imperial Irrigation District and the Metropolitan Water District of Southern California.

Past water conservation efforts using innovative and creative programs have also helped Imperial Irrigation District to reduce water consumption. Some of these programs include structural, operational, administrative, educational, cooperative, and on-farm programs. Each of these programs is discussed in more detail below.

Water Conservation Agreement

This Agreement provided for the implementation of water conservation projects, to be funded by the Metropolitan Water District, during a five year period. The projects are to result in an estimated conservation of 106,110 acre-feet of water annually. The funding from the Metropolitan Water District covers the costs of construction, operation, and maintenance of projects. In return for funding these projects, and

subject to conditions contained in the approved agreement, the Metropolitan Water District is eligible to divert additional water, equivalent to the amount of water conserved, through its Colorado River Aqueduct, which has its headworks at Lake Havasu, created by Parker Dam along the Colorado River.

Eighteen projects were selected for inclusion in the water conservation program based on individual cost-effectiveness, and as a reflection of the need to have a well-balanced overall program. The average amortized cost for the projects was estimated at \$128 per acre-foot in 1988 dollars. Construction of the projects began in February of 1990, and is scheduled for completion in December of 1994. Table 4 shows the water conservation projects that had been completed as of December 28, 1990. In addition, the estimated water conserved is also shown for each project.

Table 18. IID Water Conservation Projects and Estimated Water Conserved

Project Description	Annualized Water Conserved
Carter Reservoir	4,930 af
South Alamo Canal-Phase I	1,180 af
South Alamo Canal-Phase II	848 af
Lateral Canal Lining	6,706 af
12-Hour Delivery	12,000 af
Vail Supply Canal Lining	79 af
Non-Leak Gates	125 af
System Automation	324 af
Westside Main Canal Lining	508 af
Total Water Conserved	26,700 af
Source: "IID/MWD Water Conservation Agreement." Issue paper by Robert Lang, Assistant Manager, Imperial Irrigation District, February, 1991.	

To fully understand the effort that the Imperial Irrigation District has expended in achieving their water conservation goals, the following is an update on the status of the water conservation projects:

Trifolium (Carter) Reservoir

The completion of this project in 1988 utilized a Clean Water Bond, and consisted of a 340 acre-foot regulating reservoir. The project was to eliminate operational discharge at the end of the Westside Main Canal. The project is to conserve 4,930 acre-feet of water annually.

South Alamo Canal Lining-Phase I

Two miles of this large supply canal were lined and completed in August of 1989 with the assistance of a Clean Water Bond. Seepage of water was reduced and 1,180 acre-feet of water has been conserved.

South Alamo Canal Lining-Phase II

In addition to the first phase of this project, Phase II consisted of concrete lining the remaining 1.2 miles, and was completed in June of 1991. To date, the Imperial Irrigation District has conserved over 1,425 acre feet of water annually from this project.

Lateral Interceptor

This project consists of utilizing a header canal and 283 pond leveling gates to create a

virtual demand system for eight lateral canals. The project will cost \$5.7 million and construction is currently underway.

"Z" Reservoir

The District has a total of five regulating reservoirs. Four have been built since 1975 at a total cost of \$3.3 million and provide a total storage capacity of 1,570 AF. It is estimated that 6,200 AF of water is conserved annually through the use of these reservoirs, which help reduce operational spills from the canal systems they serve. The fifth reservoir is presently under construction and consists of a 400 AF capacity regulating reservoir. The project carries a cost of \$2.8 million and will conserve water by eliminating operational spills at the end of East Highline Canal.

Lateral Canal Lining

Between February and December of 1990, the Imperial Irrigation District concrete lined over 62 miles of lateral canals. The District is to concrete line 265 miles by December of 1994. This project will reduce seepage and increase efficiency of the canal delivery system. The project is projected to cost \$50 million and has, to date, conserved over 6,846 acre-feet of water annually.

Trifolium Interceptor

This project is similar to the Lateral Interceptor, in that its main purpose is to use a header canal and pond leveling gates to eliminate operational spills and minimize tailwater. The project encompasses thirteen large lateral canals and is projected to cost \$10 million. Research and design of this project are still underway.

Twelve-Hour Delivery

In the past, water delivery to farmers of the Imperial Valley was on a fixed 24-hour basis. In February of 1991, the Imperial Irrigation District initiated a new program which allows farmers to order small delivery heads (up to 7 cubic feet per second) on a fixed 12-hour basis. The program also allows for cutoff of the delivery within the last four hours, if the canal capacity permits. The farmers in the Imperial Valley have widely accepted this program. The program is estimated to conserve approximately 12,000 acre-feet annually.

Non-Leak Gates

This project consists of replacing the old wooden canal check gates with non-leaking aluminum gates. These types of gates were installed in June of 1990. This project has enhanced the operation of canals and also prevented water leakage. The five gates have conserved an estimated 125 acre-feet of water per year. The installation of all remaining gates is expected to be completed by the end of 1992.

Lowline Interceptor

This project is another lateral interceptor which will collect operational discharge and minimize spill from approximately sixteen other lateral canals. The project will cost \$5.3 million, and construction is scheduled to begin in 1993. The project is currently in the research phase of development.

Irrigation Water Management

Funds are used for this project to construct water conservation systems on farms. The purpose is to educate farmers on the most advanced irrigation management techniques by providing training and support. Agricultural engineers from Imperial Irrigation District plan to implement this program onto 10,000 acres of farmland. Pump back, drip irrigation and other systems, along with updated irrigation planning techniques, are used for water conservation. Thirty-four on-farm systems are currently in development.

System Automation

This project is by far the most innovative water conservation program. The cost is \$15 million, and it will radically improve Imperial Irrigation District's control of water delivery. Computers will be located on fields and will control the water gates to manage the delivery of water more accurately. The monitoring of the computer will be done by a radio-microwave system from a master water control center.

This will centralize water management and monitoring for Imperial Irrigation District. Approximately 200 field sites will provide data and be utilized to allow water control never pursued before. The program is composed of over 60 projects and has already seen the automation of five canal headings and the installation of the radio-microwave communications network. A new Water Control Center will be added to the system and is scheduled to be operational by December of 1991. Other water conservation programs include land leveling, tailwater pump back systems, low water-use crop selection, and low water-demand irrigation methods.

Structural Programs

Structural programs to conserve water include physical changes to the water conveyance and usage system that will bring about benefits independently of user practices. These programs consist of such projects as canal lining to reduce seepage losses; construction of regulating reservoirs to reduce canal spill; construction of seepage recovery lines to collect water to be pumped back into the canal for delivery to farms; farm delivery and outlet structures to provide for better water control and measurement of farm deliveries and to facilitate measurement of tailwater runoff; automatic controls and remote monitoring facilities to be operated manually in case of power outages; and construction of evaporation ponds to reduce inflow into the Salton Sea.

Operational Programs

Operational Programs refer to changes in operational procedures that have been initiated to promote water conservation. Operational programs include radio equipment and personnel training. Communication among personnel permits greater operational flexibility in switching water deliveries from one farmer to another, thereby reducing operational spills.

As newer methods are used and more structures are built, water department employees must be trained to manage and operate them. Daily on-the-job training is an integral part of the program. In addition, specialized training in water measurement

and management is given to the new hydrographers. Keeping up on the latest methods of water management and operations can help in conserving water for Imperial County.

Administrative Programs

These programs are options that are available to public distributors of water. An example of this would be the establishment of incremental water rates to encourage water conservation. The IID Board of Directors, recognizing the need to continue to expand water conservation efforts, appointed a Water Conservation Advisory Board made up primarily of farmers in 1979. The purpose of the Advisory Board is to make recommendations to the District Board regarding the implementation of additional water conservation measures.

The District approved a water conservation program called the "13 Point Program" in 1976. The overall goal of this program was to improve water use efficiency within the District and reduce inflow into the Salton Sea. Another program, the "21 Point Program", was recommended by the Water Conservation Advisory Board and adopted by the District.

Educational Programs

Educational programs have been implemented to encourage water conservation within the Imperial Valley. These programs range from public meetings to get input from the property owners themselves, to full-scale demonstrations so that others can see how new irrigation techniques and methods are used.

Cooperative Programs

The District has been involved in various cooperative studies and programs to research innovative water conservation methods. Different levels of involvement have been required of the District. For example, the District has helped the USDA Research Station in Brawley by constructing a lysimeter to determine crop water consumption; helped to construct an underground soil column laboratory, a reservoir, and a pumping station; installed four evaporation and weather stations; and provided labor, equipment, and materials for a five year irrigation efficiency study.

The District has also cooperated with the University of California Irrigation Management Information System and mobile laboratory programs sponsored by the University in conjunction with the California Department of Water Resources (DWR).

On-Farm Irrigation Programs

Farmers have been practicing on-farm irrigation methods to conserve water. Agricultural lands must be tilled, graded, and prepared for the application of water. Tile drains have been installed and, in addition, head ditches have been lined to reduce water loss due to seepage. This program is still in effect.

Future and current County of Imperial projects and programs

Imperial County is seen as one of the most, if not the most, agriculturally productive regions in the world. In order to continue the deserved reputation of supplying the world with high quality food crops, the County must appreciate and conserve its vital resources which enable the production of such valuable crops. One of these important vital resources is water. The County must recognize and consider the future of its economy and agriculture is the primary sector. Obviously, the continued urban growth in the County is equally dependent upon receiving adequate water resources.

Through water conservation measures, programs, and policies, the County and the District will continue to efficiently utilize this valuable resource as it has done in the past. Also, water conservation projects with other agencies such as the "Water Conservation Agreement between Imperial Irrigation District and the Metropolitan Water District of Southern California" will enhance the availability of water within the County and encourage additional water conservation projects. With continued monitoring of the surface waters in Imperial County by the Imperial Irrigation District and others, any increase in salt concentrations can be addressed in order to enhance water quality.

Recognizing that water is a vital resource, continued cooperation and coordination between Imperial County and other Local, State, and Federal agencies, water resources can be conserved and used for all approved beneficial purposes, including continued growth and development in all economic sectors. Also, continued planning and coordination efforts by the County can assure that future developments will not only enhance the economy, but may also encourage various industries to relocate and create a more broad based economy in the County.

Overall, Imperial County has great potential to wisely utilize its water resources and enhance the quality of water for all beneficial uses. Strategies should be carefully

planned and incorporated into the decision making process of the County to assure adequate conservation of its water resources and the availability of water in the future.

Policies and Programs

The following policies are statements of purpose and/or direction that are meant to help guide decision makers in making judgments on issues concerning water resources in the County. These policies specifically address the Objective of the Water Element, which in turn accomplish the Goals of the Element. The Policy is presented first for each sub-heading, followed by more specific program statements.

1. Adequate Domestic Water Supply

Policy

It is the policy of the County of Imperial is to implement efficient regulation of land uses that economizes on water consumption, enhances equivalent dwelling unit demand for domestic water resources, and that makes available affordable resources for continued urban growth and development.

Programs

- The County of Imperial shall regulate and encourage the economical use of domestic water resources through the implementation of applicable State codes and the promotion of drought resistant native and non-native desert landscaping in all types of urban development.
- The County of Imperial shall encourage the distribution of water conservation literature and signage in public restaurants, hotels, and motels as a means of preserving domestic water treatment and wastewater treatment facility capacities.
- The County of Imperial shall encourage the distribution of low cost water conservation technologies and literature to all households in the County as a means of assuring an affordable quality of life and of preserving the capacities of domestic water treatment and wastewater treatment facilities.
- The County of Imperial shall encourage the metering of agricultural and urban water use, including encouraging municipalities to initiate water metering programs to promote more thoughtful and economical use of domestic water.

The County of Imperial shall assure the enforcement and implementation of Section 17921.3 of the Health and Safety Code, Title 20, California Administrative Code Section 1601(b), and applicable sections of Title 24 of the State Code through the development and building permit process.

- The County of Imperial shall study the appropriateness of and need for impact and/or development fees, which can be used to preserve important water resources and assure their long-term availability.
- The County of Imperial shall take an active role in soliciting the support of State and Federal agencies, particularly the California Water Quality Control Board and the U.S. Environmental Protection Agency, in the cleanup of the New River at the International Border.
- The County of Imperial Health Department, Parks and Recreation Department, and other responsible agencies shall maintain programs and regulations to assure safe and healthful water resources for sport, recreation, and wildlife uses.
- The County of Imperial, also with the Imperial Irrigation District, the California Department of Fish & Game, and the U.S. Fish & Wildlife Service, shall cooperate and coordinate the use of water resources to protect and enhance valuable wildlife communities and habitats of the region.
- The County of Imperial shall take an active role in encouraging the development of infrastructure and a regulatory environment in the Republic of Mexico which addresses the chronic pollution of the New River and Alamo River from agricultural, industrial, and urban development.
- The County Health Department shall report annually to the Board of Supervisors on the conditions of the New River at the International Border and within the County, and the progress made by State and Federal agencies in reducing the level of contaminants being carried to the Salton Sea.
- As part of the effort to protect and enhance wildlife and their habitat, the County of Imperial shall actively pursue the preservation, maintenance of breeding and foraging habitat for native and migratory birds and animals, preserving these biological systems as indicators of environmental integrity, and as a source of sport and recreation.
- The County of Imperial shall monitor, coordinate, and cooperate with State and Federal agencies to assure the protection of the Colorado River resource from over utilization and excessive export to protect urban and agricultural interests and to assure the health of the various biological habitats of the Colorado River.

Adequate Agricultural Irrigation Water Supply

Policy

The efficient and cost-effective utilization of local and imported water resources through the

development and implementation of appropriate and separate agricultural and urban use areas.

Programs

- The County of Imperial shall play a pro-active role in encouraging the use of efficient and cost-effective methods of water conservation in all aspects of urban development as well as agriculture.
- The County of Imperial shall encourage the reclamation and use of agricultural and urban wastewaters in urban landscaping, golf courses, and wildlife habitat areas wherever practical.
- The County of Imperial shall play a pro-active role in encouraging the efficient use and conservation of the Colorado River resource, and in maintaining an adequate allocation for local agricultural use in Imperial Valley.

4. Protection of Water Resources from Hazardous Materials

Policy

Adoption and implementation of ordinances, policies, and guidelines which assure the safety of County ground and surface waters from toxic or hazardous materials and/or wastes.

Programs

- The County of Imperial shall make every reasonable effort to limit or preclude the contamination or degradation of all groundwater and surface water resources in the County.
- All development proposals brought before the County of Imperial shall be reviewed for potential adverse effects on water quality and quantity, and shall be required to implement appropriate mitigation measures for any significant impacts.
- The County of Imperial shall coordinate with the California Regional Water Quality Control Board and incorporated cities to assure that discharge from community wastewater treatment plants meet or exceed applicable State and Federal standards.
- The County of Imperial shall play an active role in assuring the advance planning necessary to provide community and/or industrial wastewater treatment facilities which keep pace with continued urbanization in the County.
- The County of Imperial shall support the investigation of innovative methods of wastewater treatment which reduces discharge of contaminants into County surface waters, while enhancing the ruderal and riparian habitats of the County.
- The County of Imperial shall direct staff of the County Health Department, Planning/Building Department, and other appropriate departments, as well as the County Agricultural Commissioner, to review existing ordinances, policies, and guidelines and determine their adequacy in protecting groundwater and surface water from contamination by hazardous materials and/or waste.

The Imperial County Health Department, as the Local Enforcement Agency, shall continue monitoring operations at the various landfills across the County and shall periodically report on the impacts or potential impacts of these landfills on ground and surface water resources in the County.

- The County of Imperial shall confer and coordinate with the California Department of Health, Regional Water Quality Control Board, and the U.S. Environmental Protection Agency to assure that these agencies are taking active steps to protect and reclaim groundwater and surface waters from contamination.

5. Coordinated Water Management

Policy

Encourage and provide inter-agency and inter-jurisdictional coordination and cooperation for the management and wise use of water resources for contact and non-contact recreation, groundwater recharge, hydroelectric energy production, and wildlife habitat as well as for domestic and irrigation use.

Programs

- The County of Imperial shall confer and consult with the Imperial Irrigation District and incorporated communities of the County to assure a coordinated and coherent water policy for all interested parties in the County.
- The County of Imperial shall actively consult and confer with IID and other Districts, and the incorporated communities of the County regarding the limitation or elimination of impacts to surface and groundwater resources due to agricultural and urban development.
- The County of Imperial shall lend its support to programs and policies of the State Water Resources Control Board, Regional Water Quality Control Board, and other agencies which promote the wise and efficient use of water resources. Particular attention shall be given to the State Water Resources Control Board's regulations pertaining to water quality control and land development.
- The County of Imperial shall regulate land development and natural resource management to protect the limited but important areas of the County which contribute to groundwater recharge.
- The County of Imperial shall support the continuance and development of hydroelectric resources in the County in conjunction with compatible resource protection and management policies.
- The County of Imperial shall encourage the fair and appropriate assessment of fees and charges for the deliveries of urban and agricultural waters, and for water treatment capacity.

The County of Imperial shall take an active role in maintaining and enhancing river, sea, ruderal, and riparian habitats, as well as other biotic systems in the County which contribute to enhance water resource protection and maintenance.

- The County of Imperial shall cooperate and coordinate with the Regional Water Quality Control Board and other responsible agencies to investigate the potential for the creation of additional wetlands as a means of providing tertiary waste treatment while expanding and enhancing wetlands habitat.
- All County of Imperial departments with responsibility for regulation or jurisdiction for oversight of issues of water resource management shall make every effort to coordinate activities and share information and resources to assure protection of this vital resource.
- The County of Imperial shall act in a pro-active, cooperative, and coordinated manner with Local, State, Federal and International agencies responsible for maintenance of minimal standards for local surface and groundwater resources.

Demand Management Strategies of the County of Imperial

Many of the major water resource issues faced by the County now and in coming years include the threat of continued deterioration of surface and groundwater resources, the possible reduction of available Colorado River water caused by increased demand and adverse climatic conditions, as well as the balancing of urban and agricultural needs with those of plants and wildlife.

Pollution of surface waters from urban development primarily in the Republic of Mexico, but also in the County, continue to pose a serious threat to groundwater and surface water resources in the County. These issues also include the continued increase in salinity of the Salton Sea, as well as the high agrichemical and suspended solids load draining into the Sea, which have an adverse impact on sport fishing and other recreational uses associated with this important resource.

The Water Element goals are developed as broad based statements reflecting the County's values, aims, and aspirations for management of this vital resource. These goals address the physical development of the County as well as the wise use and preservation of the County's important water resources. The programs set forth

herein have been developed to implement the goals and objectives of the Water Element. The policies set forth specific performance requirements for the various plans which relate to water issues in Imperial County.

The goals and objectives are not to be inclusive and are general in nature. They are not to be considered as a means to regulate a specific area. Their main intent is for them to be implemented only to the extent that such implementation is achieved by reasonable regulations or rights therein. The goals and objectives may change at any time to accommodate appropriate growth within the County.

Adequate Domestic Water Supply

Goal 1: The County will secure the provision of safe and healthful sources and supplies of domestic water adequate to assure the implementation of the County General Plan and the long-term continued availability of this essential resource.

Objective 1.1: The efficient and cost-effective utilization of local and imported water resources through the development and implementation of urban use patterns.

Objective 1.2: Cooperation between the Cities and County for the need to maintain, upgrade, and expand domestic water and sewage treatment facilities of the communities within the County, the need for the implementation of appropriate development fees, and the raising of service fees to off-set limited public financial resources.

Objective 1.3: The efficient regulation of land uses that economizes on water consumption, enhances equivalent dwelling unit demand for domestic water resources, and that makes available affordable resources for continued urban growth and development.

Protection of Surface Waters

Goal 2: Long-term viability of the Salton Sea, Colorado River, and other surface waters in the County will be protected for sustaining wildlife and a broad range of ecological communities.

Objective 2.1 The continued viability of the agricultural sector as an important source of surface water for the maintenance of valuable wildlife and recreational resources in the County.

Objective 2.2 A balanced ecology associated with the riparian and ruderal biological communities important as breeding and foraging habitats for native and migratory birds and animals occurring within the County.

Objective 2.3 Preservation of riparian and ruderal habitats as important biological filters as breeding and foraging habitats for native and migratory birds and animals.

Adequate Agricultural Irrigation Water Supply

Goal 3: The County will secure the provision of safe and healthful sources and supplies of agricultural irrigation water adequate to assure the continuation of agricultural land uses as established by the County General Plan and the long-term continued availability of this essential resource.

Objective 3.1 The efficient and cost-effective utilization of local and imported water resources through the development and implementation of innovative agricultural use patterns.

Protection of Water Resources from Hazardous Materials

Goal 4: The County will adopt and implement ordinances, policies, and guidelines that assure the safety of County ground and surface waters from toxic or hazardous materials and wastes.

Objective 4.1 The development and implementation of infrastructure and

regulatory policies in the Republic of Mexico, which reduce contamination of the New River, Alamo River, and the Salton Sea.

Objective 4.2 The provision of safe and efficient community wastewater treatment facilities which adequately service the present and future needs of residential, commercial, and industrial development within the Imperial Irrigation District service area.

Coordinated Water Management

Goal 5: Water Resources shall be managed effectively and efficiently through inter-agency and inter-jurisdictional coordination and cooperation.

Objective 5.1: Encourage and provide for the management and wise use of water resources for contact and non-contact recreation, groundwater recharge, hydroelectric energy production, and wildlife habitat as well as for domestic and irrigation use.

Objective 5.2: Aid in the protection and enhancement of limited water resources so as to provide for the indefinite use and maximum enjoyment.

Planned Water Supply Projects and Programs

Law

10631(h) Include a description of all water supply projects and water supply programs that may be undertaken by the urban water supplier to meet the total projected water use as established pursuant to subdivision (a) of Section 10635. The urban water supplier shall include a detailed description of expected future projects and programs, other than the demand management programs identified pursuant to paragraph (l) of subdivision (f), that the urban water supplier may implement to increase the amount of the water supply available to the urban water supplier in average, single-dry, and multiple-dry water years. The description shall identify specific projects and include a description of the increase in water supply that is expected to be available from each project. The description shall include an estimate with regard to the implementation timeline for each project or program.

Table 19. Future Water Supply Projects

Project Name	Normal Year AF to agency	Single-Dry AF/Year to agency	Year 1	Year 2	Year 3
New Water Treatment Plant – Phase II (FY 2010 – FY 2015)	16,800	16,800	16,800	16,800	16,800
Malan from 2 nd Street to Tenth Street, twin 24-inch pipeline project	175	175	175	175	175
Malan from 10 th Street to Best-2,400LF 24"PVC water pipeline	205	205	205	205	205
3 MG Water Storage Reservoir at the Paloma Subdivision	0	0	0	0	0
3 MG Water Storage Reservoir at 18 th Street	0	0	0	0	0
Total	17,180	17,180	17,180	17,180	17,180
Units of Measure: Acre-feet/Year					

Development of Desalinated Water

Because of the abundance and cost effectiveness of treating surface water from the Colorado River, there are no plans to use and treat the brackish groundwater as a long-term supply in the Imperial Valley.

Water Shortage Contingency Plan

Preparation for Catastrophic Water Supply Interruption

Law

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

10632 (c) Actions to be undertaken by the urban water supplier to prepare for, and implement during, a catastrophic interruption of water supplies including, but not limited to, a regional power outage, an earthquake, or other disaster.

City of Brawley Plan

In the event of extended regional power outages, the City will attempt to attain diesel fuel to maintain the operation of the standby generators that power critical functions at the water treatment plant. The fuel would be brought in every two days. In this way the residents of Brawley would not lose supply of potable water.

In the event of an earthquake that damages critical components of the water treatment plant, the City will divert irrigation water into the potable water distribution system. Under this scenario non-potable water would be delivered to City customers and the water would have to be boiled by each customer prior to potable water use. The water could be delivered by diesel powered pumps to the City's distribution system.

During a shortage the City would increase media attention to the water supply situation and would step up public water education programs, encourage property owners to apply for landscape and interior water use surveys and continue to advertise the importance of customers installing efficient plumbing fixtures.

During declared shortages, or when a shortage declaration appears imminent, the

City Manager activates a City water shortage response team. The team includes: water, fire, planning, health, emergency services, public affairs, parks and recreation, and the Mayor's Office. The team has reviewed this 2005-updated Urban Water Management Plan. During a declared water shortage, the City will accept applications for new building permits but will not issue permits until the shortage declaration is rescinded. An appeal process is available and ends at the City Council.

Imperial Irrigation District Plan

The Emergency Preparedness Plan includes required staffs action and procedure to respond to events that impair water operation of canals, laterals, drains, dams, and other facilities. These responses are not normal operation and maintenance activities. Generally, any occurrence that requires an immediate response is classified as an extreme event or emergency.

The Emergency Preparedness Plan defines the role each responsible employee will play during an emergency. Water Department staff conducts emergency and/or disaster response planning in the Water Control Center. Coordination of staffs with other departments will take place in the General Manager's conference room. All American Canal River Division staff planning will be centered in the Imperial Dam Control House. Other staffs meet and coordinate actions at designated areas.

Established actions and procedures exist for extreme events and emergencies that endanger operation of the water system. Possible emergencies/extreme events that endanger operation of the water system could include: earthquakes, storms, rain, run-off from desert washes, flooding, facility or structure damage, power outages, fire, vehicles in canals, equipment theft/vandalism, or other disaster. The Imperial Irrigation District's water delivery and drainage systems do not totally shut down during an emergency.

The Imperial Irrigation District has conducted Emergency Preparedness Exercises in the past. Emergency preparedness exercises will be updated with the development of

new emergency preparedness exercises. Water Department staffs trained and participated with the U. S. Department of the Interior Bureau of Reclamation's Tabletop Exercise for emergency preparedness.

For the cities in the Imperial Unit there is a ten-day storage holding capacity requirement. The Imperial County Office of Emergency Services requires this storage holding capacity for cities (Imperial Irrigation District, 1998, p.22).

Supplemental Water Supplies

The City uses water from the Colorado River and a water shortage is almost inconceivable. The City is geographically isolated, has no water system connections to other areas, and has no opportunity for water transfers, wheeling or other exchanges. Groundwater in the area is brackish. The Colorado River is the only water supply for the City in the foreseeable future.

Long Term Additional Water Supply Options

The following table summarizes the actions the City will take during a water supply catastrophe.

Table 20. Preparation for a Catastrophe

Examples of Actions	Check if Discussed
Develop a catastrophe preparedness plan.	✓
Contact and coordinate with other agencies.	✓
Create an Emergency Response Team/Coordinator.	✓
Develop methods to communicate with the public.	✓
Determine what constitutes a water shortage.	✓
Determine how to 'stretch' existing water storage facilities	✓
Provide off-line power for water pumping.	✓
Provide emergency water treatment facilities where necessary.	✓
Determine where the funding will come from.	✓
Put employees/contractors on-call.	✓

Water Shortage Contingency Ordinance/Resolution

Law

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

10632 (h) A draft water shortage contingency resolution or ordinance.

City of Brawley Water Shortage Response

The City of Brawley adopted guidelines, which require that adequate water supply and wastewater treatment capacities be available before new development can be approved. In the event of a declared water shortage, the City has adopted a policy to establish a moratorium on new water service permits.

Stages of Action

Law

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

10632 (a) Stages of action to be undertaken by the urban water supplier in response to water supply shortages, including up to a 50 percent reduction in water supply and an outline of specific water supply conditions which are applicable to each stage.

Rationing Stages and Reduction Goals

The City has developed a four stage rationing plan (see Table 10) to invoke during declared water shortages. The rationing plan includes voluntary and mandatory rationing, depending on the causes, severity, and anticipated duration of the water supply shortage.

Table 21. Water Rationing Stages and Reduction Goals

Shortage Condition	Stage	Reduction Goal	Type of Rationing Program
Up to 15%	I	15%	Voluntary
15 – 25%	II	25%	Mandatory
25 - 35%	III	35%	Mandatory
35 - 50%	IV	50% or >	Mandatory

Priority by Use

Priorities for use of available potable water during shortages were based on input from the City Emergency Response Team, citizen groups, and legal requirements set forth in the California Water Code, Sections 350-358. Water allocations are established for all customers according to the following ranking system:

- Minimum health and safety allocations for interior residential needs (includes single family, multi-family, hospitals and convalescent facilities, retirement and mobile home communities, and student housing, and fire fighting and public safety)
- Commercial, industrial, institutional/governmental operations (where water is used for manufacturing and for minimum health and safety allocations for employees and visitors), to maintain jobs and economic base of the community (not for landscape uses)
- Existing landscaping
- New customers, proposed projects without permits when shortage declared.

Health and Safety Requirements

Based on commonly accepted estimates of interior residential water use in the United States, Table 11 indicates per capita health and safety water requirements. In Stage I shortages, customers may adjust either interior or outdoor water use (or both), in order to meet the voluntary water reduction goal.

However, under Stage II, Stage III and Stage IV mandatory rationing programs, the

City has established a health and safety allotment of 50 gpcd (which translates to 24 HCF per person per year), because that amount of water is sufficient for essential interior water with no habit or plumbing fixture changes. If customers wish to change water use habits or plumbing fixtures, 50 gpcd is sufficient to provide for limited non-essential (i.e. outdoor) uses.

Stage IV mandatory rationing, which is likely to be declared only as the result of a prolonged water shortage or as a result of a disaster, would require that customers make changes in their interior water use habits (for instance, not flushing toilets unless "necessary" or taking less frequent showers).

Table 22. Per Capita Health and Safety Water Quantity Calculations

	Non-Conserving Fixtures		Habit Changes ¹		Conserving Fixtures ²	
Toilets	4 flushes x 3.5 gpf	14	3 flush x 3.5 gpf	10.5	4 flush x 1.6 gpf	6.4
Shower	5 min x 3.0 gpm	15	4 min x 3.0 gpm	12	5 min x 2.0	10
Washer	12.0 gpcd	12	11.0 gpcd	11	10.0 gpcd	10
Kitchen	4 gpcd	4	4 gpcd	3	4 gpcd	3
other	4 gpcd	4	4 gpcd	4	4 gpcd	4
Gallons per person per day		49		40.5		33.4
CCF per person per year		24		20		16
¹ Reduced shower use results from shorter length of shower and reduced flow. Reduced washer use results from fuller loads. ² Fixtures include ULF 1.6 gpf toilets, 2.0 gpm showerheads, faucet aerators and efficient clothes washers.						

Water Shortage Stages and Triggering Mechanisms

As the water purveyor, the City of Brawley must provide the minimum health and safety water needs of the community at all times. The water shortage response is designed to provide a minimum of 50% of normal supply during a severe or extended water shortage. The rationing program triggering levels shown below were established to ensure that this goal is met.

Rationing stages may be triggered by groundwater contamination, power failure,

earthquake or other natural disaster.

The City's only potable water source is the Colorado River. Specific criteria for triggering the City's rationing stages are shown in Table 12.

Table 23. Water Shortage Stages and Triggering Mechanisms

Percent Reduction of Supply	Stage I Up to 15%	Stage II 15 - 25%	Stage III 25 - 35%	Stage IV 35 - 50% >
Water Supply Condition				
Supply	Projected supply insufficient to provide 80% of "normal" demand Or	Projected supply insufficient to provide 75% of "normal" demand Or	Projected supply insufficient to provide 65% of "normal" demand Or	Projected supply insufficient to provide 50% of "normal" demand Or
Water Quality	Contamination of 10% of water supply (exceeds primary drinking water standards)	Contamination of 20% of water supply (exceeds primary drinking water standards)	Contamination of 30% of water supply (exceeds primary drinking water standards)	Contamination of 40% of water supply (exceeds primary drinking water standards)
Disaster				Disaster Loss

Water Allotment Methods

The City has established the following allocation method for each customer type. See Appendix C for sample water shortage rationing allocation method.

Single Family	Hybrid of Per-capita and Percentage Reduction
Multifamily	Hybrid of Per-capita and Percentage Reduction
Commercial	Percentage Reduction
Industrial	Percentage Reduction
Govt/Institutional	Percentage Reduction
Recreational	Percentage Reduction - vary by efficiency
New Customers	Per-capita (no allocation for new landscaping during a water

shortage.)

Based on current and projected customer demand, Appendix C indicates the water allocated to each customer type by priority and rationing stage during a declared water shortage.

Individual customer allotments are based on a five-year period. This gives the City a more accurate view of the usual water needs of each customer and provides additional flexibility in determining allotments and reviewing appeals. However, no allotment may be greater than the amount used in the most recent year of the five-year base period.

The Water Department Manager shall classify each customer and calculate each customer's allotment according to the Sample Water Rationing Allocation Method.

The allotment shall reflect seasonal patterns. Each customer shall be notified of their classification and allotment by mail before the effective date of the Water Shortage Emergency. New customers will be notified at the time the application for service is made. In a disaster, prior notice of allotment may not be possible; notice will be provided by other means. Any customer may appeal the Water Department Manager's classification on the basis of use or the allotment on the basis of incorrect calculation.

Prohibitions, Consumption Reduction Methods and Penalties

Law

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

10632 (d) Additional, mandatory prohibitions against specific water use practices during water shortages, including, but not limited to, prohibiting the use of potable water for street cleaning.

10632 (e) Consumption reduction methods in the most restrictive stages. Each urban water supplier may use any type of consumption reduction methods in its water shortage contingency analysis that would reduce water use, are appropriate for its area, and have the ability to achieve a water use reduction consistent with up to a 50 percent reduction in water supply.

Mandatory Prohibitions on Water Wasting

The Brawley "No Waste" Ordinance prohibits wasteful water uses such as over-watering lawns and shrubbery resulting in excessive nuisance water in the streets.

Table 24. Consumption Reduction Methods	
Consumption Reduction Methods	Stage When Effective
Education Program	All Stages
Demand reduction program	All stages
Voluntary plumbing fixture replacement	All stages
Use prohibitions	All stages
Water shortage pricing	All stages
Voluntary rationing	I
Restrict building permits	II, III, IV
Mandatory rationing	II, III, IV
Percentage reduction by customer type	II, III, IV
Per capita allotment by customer type	IV
Flow restriction for wasters	IV

See Appendix C, the "No Waste" Ordinance and Moratorium on New Connections - which details the reduction methods - regarding Table 13.

Excessive Use Penalties

Any customer violating the regulations and restrictions on water use set forth in the "No Waste" Ordinance shall receive a written warning for the first such violation. Upon a second violation, the customer shall receive a written warning and the City may cause a flow-restrictor to be installed in the service. If a flow-restrictor is placed, the violator shall pay the cost of the installation and removal. Any willful violation occurring subsequent to the issuance of the second written warning shall constitute a misdemeanor and may be referred to the Office of the City Attorney for prosecution. If water service is disconnected, it shall be restored only upon payment of the turn-on charge fixed by the City Council.

Revenue and Expenditure Impacts and Measures to Overcome Impacts

Law

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

10632 (g) An analysis of the impacts of each of the actions and conditions described in subdivisions (a) to (f), inclusive, on the revenues and expenditures of the urban water supplier...

10632 (g) [An analysis of the impacts of each of the] proposed measures to overcome those [revenue and expenditure] impacts, such as the development of reserves and rate adjustments.

All surplus revenues that the City collects are currently used to fund the Rate Stabilization Fund, conservation, recycling, and other capital improvements. The City estimated projected ranges of water sales by shortage stage to best understand the impact each level of shortage will have on projected revenues and expenditures by each shortage stage.

This analysis is undertaken first with no rate increases and then with a 25% rate increase at Stage II; 50% at Stage III, and a 100% increase at Stage IV. To cover increased expenses and decreased sales, rate increases would need to be "severe".

See Appendix D for the City's efforts to establish an Emergency / Rate Stabilization Fund.

Reduction Measuring Mechanism

Law

10632. The plan shall provide an urban water shortage contingency analysis which includes each of the following elements which are within the authority of the urban water supplier:

10632 (i) A mechanism for determining actual reductions in water use pursuant to the urban water shortage contingency analysis.

Mechanism to Determine Reductions in Water Use

Under normal water supply conditions, potable water production figures are recorded daily. Totals are reported weekly to the Water Treatment Facility Supervisor. Totals are reported monthly to the Water Department Manager and incorporated into the water supply report.

During a Stage I or Stage II water shortage, daily production figures are reported to the Supervisor. The Supervisor compares the weekly production to the target weekly production to verify that the reduction goal is being met. Weekly reports are forwarded to the Water Department Manager and the Water Shortage Response Team. Monthly reports are sent to the City Council. If reduction goals are not met, the Manager will notify the City Council so that corrective action can be taken.

During a Stage III or Stage IV water shortage, the procedure listed above will be followed, with the addition of a daily production report to the Manager.

During emergency shortages, production figures are reported to the Supervisor hourly and to the Manager and the Water Shortage Response Team daily. Daily reports will also be provided to the City Council and the Imperial County Office of Emergency Services.

Water Recycling

Law

10633. The plan shall provide, to the extent available, information on recycled water and its potential for use as a water source in the service area of the urban water supplier. To the extent practicable, the preparation of the plan shall be coordinated with local water, wastewater, groundwater, and planning agencies and shall include all of the following:

10633 (a) A description of the wastewater collection and treatment systems in the supplier's service area, quantification of the amount of wastewater collected and treated and the methods of wastewater disposal.

Wastewater Collection and Treatment in Brawley

The City Waste Water Treatment Plant (WWTP) manages wastewater collection and treatment for the City. All of the wastewater flows from the City (including storm water run-off), and is collected and treated at the WWTP. The WWTP treats an average of 3.5 million gallons per day (mgd).

Table 25. Wastewater Treatment

Treatment Plant Name	Location (City)	Average Daily (2005)	Maximum Daily (2005)	Year of Planned Build-out	Planned Maximum Daily Volume
WWTP	Brawley	3.55MGD	4.0 MGD	2040	6.0 MGD

City of Brawley Wastewater Treatment

The sewage treatment plant was upgraded from 3.9 million gallons per day to 6.0 million gallons per day in 2003. The cost of this project was 7.0 million dollars. The renovations included the following:

- Replacement of the facilities head works.
- Installation of a 90-foot diameter clarifier.
- Additional aeration equipment for the system lagoons.
- Demolition of the existing digesters.

- Replacement of the electrical system.
- Addition of disinfection chamber for the plant's discharge flows.

The wastewater treatment facility consists of headworks, three primary clarifiers, four lagoons, a UV disinfection unit, and sludge drying beds. The headworks consist of a screen, vortex grit chamber, and a flow splitter box. The three primary clarifiers are adjacent to the headworks. These clarifiers have not been in use since the digesters were removed in 2002. There are 4 lagoons; the first is divided into two sections. The first four lagoons are aerated; the final lagoon is not. The final step in the treatment process is the ultraviolet disinfection facility. From here, the wastewater is discharged to the New River.

After demolition of the digesters, the City moved the sludge to Pond 1 at the treatment facility. The City of Brawley recently requested approval from the Regional Board to remove the accumulated sludge from Pond A1. The City also dredged the sludge from Pond 2 and placed it in Pond 1. Pond 1 has been since then been isolated.

Ammonia Problems at the WWTP

The City of Brawley (City) requested and received assistance from the Border Environment Cooperation Commission (BECC) to evaluate and recommend solutions to the ongoing problems at the City's wastewater treatment facility of discharging high levels of ammonia and solids handling.

The high levels of ammonia in the City's treatment facility discharge can be attributed to the following:

- High influent ammonia concentrations with sharp temporary increases following high discharges from the Beef Plant
- Lack of adequate time during treatment processes where all conditions are present that favor the growth of nitrifying bacteria that consume ammonia
- No recycle within the treatment process that would increase the mean cell residence time of nitrifying bacteria and the consumption of ammonia

The City's wastewater treatment facility has discharged levels of ammonia during recent years that cause the effluent to be toxic. Sporadic toxicity violations caused by the high ammonia levels began in 1999. Since then, the problem has grown and the City is in violation on a monthly basis. The California Regional Water Quality Control Board (Regional Board) has responded by fining the City \$3,000 per month. According to the Regional Board, Brawley has not taken the appropriate measures to address the ammonia concerns.

The City demolished the anaerobic digesters at the treatment facility in 2002 due to excessive corrosion. The City did not have funding available to replace the digesters and now there are no digesters at the treatment facility. The facility has a total of three primary clarifiers, one of which was recently constructed. Since demolition of the digesters, the three clarifiers have been idle. Currently, the wastewater flow passes through a bar screen, bypasses the clarifiers, and flows directly to the ponds. Upon demolishing the digesters, the sludge/solids were moved to the first onsite treatment ponds. The pond was then isolated. The City is nearly ready to begin a compliance project where the solids will be removed from the pond.

The remaining biological and chemical parameters of the plant's effluent meet the required limits set forth in the NPDES permit. The biochemical oxygen demand (BOD) and total dissolved solids (TSS) discharge values for the plant are within the limits of City's permit.

In municipal wastewater, ammonia is normally generated through decomposition of animal proteins, fecal matter, and urea. Ammonia generation increases with time spent in an anaerobic environment, such as a long detention time in a pump station, a holding tank in a recreational vehicle, or a port-o-potty.

The City sampled wastewater within its collection system to determine the concentrations of ammonia at several locations. In general, the areas with the highest concentrations were in three areas. The City's Wastewater Pretreatment Ordinance (Nov. 2001 – Appendix I) limits ammonia concentration discharging into the City's

collection system at 40 mg/L.

The design approach presented to the City included the lowering of ponds 1A and 1B to a depth of 15 ft. from the water surface elevation to the bottom of the ponds, the installation of curtain baffle walls in pond 2 to interchange between oxic and anoxic zones. The design approach also includes the installation of a recycle pump station at the south-east area of pond 2 and approximately 850 LF of 12-inch pipeline to recycle effluent from pond 2 to ponds 1A and 1B.

It was also proposed to the City to continue using the existing 6 15-HP aerators in each of the two ponds 1A and 1B. Pond 2 is currently operating with 4 30-HP and 2 15-HP aerators. In order for the nitrification process to occur in pond 2, extensive aeration is required. It was proposed to the City pond 2 will require 9 30-HP aerators in the oxic zone and 3 15-HP aerators in the anoxic zone. Pond 3 will operate with 4 15-HP aerators and pond 4 will operate with the existing solar-bees.

Rock will be installed around the perimeter of pond 2 to prevent erosion. Nolte will provide energy calculations to determine the additional power required to operate the additional aerators.

The proposed Brawley WWTP project will effectively remove influent levels of ammonia of 35mg/L to an affluent level of less than 1mg/L. At influent levels of ammonia above 35mg/L and up to 75mg/L, the system will also effectively reduce the effluent ammonia level to less than 1mg/L but will generate nitrate levels in the effluent of up to 20mg/L.

The proposed project reduces the concentration of ammonia in the effluent that flows to the New River and Salton Sea. Toxicity tests on effluent samples indicate that high ammonia levels in the treatment facility effluent have impacted the quality of water in the New River. The proposed project will protect the water resources in the area from further degradation, and improve the quality of the water.

Recycled Water

The City of Brawley provides sewer service and has a wastewater treatment plant which produces secondary (includes de-nitrification) treatment level wastewater. Treated waste water is discharged to percolation ponds. The cost of the City's water supply is \$109 AF (\$16 AF for treatment and \$93 AF pumping from the deepest well) and the cost of a recycled water distribution system would exceed \$250 AF. The use of recycled water in the City of Brawley is unlikely to ever be cost-effective.

Wastewater Disposal and Recycled Water Uses

Law

10633 (b) A description of the recycled water currently being used in the supplier's service area, including but not limited to, the type, place and quantity of use.

10633 (c) A description and quantification of the potential uses of recycled water, including, but not limited to, agricultural irrigation, landscape irrigation, wildlife habitat enhancement, wetlands, industrial reuse, groundwater recharge, and other appropriate uses, and a determination with regard to the technical and economic feasibility of serving those uses.

10633 (d) The projected use of recycled water within the supplier's service area at the end of 5, 10, 15, and 20 years.

Potential for Recycled Water Use

No wastewater is recycled for other uses. The WWTP discharges the treated waste water to percolation ponds, where it returns to the groundwater on the downslope groundwater gradient, southeast of the City. All of the City's potable water supply is pumped from the upslope groundwater gradient, northwest of the City. A groundwater aquifer receives the City's treated wastewater effluent and is used downstream.

Imperial Irrigation District Recycled Water Use

The Imperial Irrigation District does not operate or maintain facilities for potable water recycling, wastewater generation, wastewater collection, or wastewater treatment. The

Imperial Irrigation District does allow the reuse of its drainage water within the Imperial Unit service area (Imperial Irrigation District, 1998, Water Rates Schedule No.5 Reuse of Drainage water).

Encouraging Recycled Water Use

Law

10633 (e) A description of actions, including financial incentives, which may be taken to encourage the use of recycled water, and the projected results of these actions in terms of acre-feet of recycled water used per year.

Proposed Actions to Encourage Use of Recycled Water

The use of recycled water in the City of Brawley would not be cost-effective in any foreseeable circumstance. The City has no plans to consider or study the use of recycled water.

Recycled Water Optimization Plan

Law

10633 (f) A plan for optimizing the use of recycled water in the supplier's service area, including actions to facilitate the installation of dual distribution systems and to promote recirculating uses.

Plan for Optimizing the Use of Recycled Water

The use of recycled water in the City of Brawley would not be cost-effective in any foreseeable circumstance. The City has no plans to consider or study the use of recycled water.

APPENDIX A

List Of Groups Who Participated In The Development Of This Plan

Imperial Irrigation District Resources Planning and Management staff
 City of Brawley City Planning and Public Works staff
 City of Calexico staff
 City of El Centro City staff
 Imperial County Planning Planning/Building Department staff
 Imperial County Public Works Department staff
 Members of the public who submitted draft plan comments

Individual Coordinating Agency Staff

Brawley:

Ruben Mireles, Water Plant City of Brawley (760) 344-5800 ext 11
 400 Main St. Plant (760) 344-2698
 Brawley, CA 92227 Fax (760) 344-0202

El Centro:

Paul Steward, Water Plant Supervisor El Centro
 3010 S. 8th St./1275 Main St. (760) 337-4575
 El Centro, CA 92243 Fax (760) 337-4576

Hector Munoz, City of El Centro
 3010 S. 8th St./1275 Main St.
 El Centro, CA 92243

Calexico:

Victor Rodriguez, Water Department Supervisor City of Calexico
 545 Pierce Ave. / 608 Heber Ave. (760) 768-2162
 Calexico, CA 92231 Fax (760) 768-3661

Imperial County:

Jim Minnick, Planner II
 Imperial County Planning/Building Dept.
 939 Main St., Suite B1 (760) 482-4236 (?ext 278)
 El Centro, CA 92243 Fax (760) 353-8338

Imperial Irrigation District

Vickie Doyle
 Imperial Irrigation District
 Technical Resources and Planning Unit
 333 E. Barioni Blvd. (760) 339-9446
 Imperial, CA 92251 Fax (760) 339-9009

APPENDIX B

Resolution To Adopt The Urban Water Management Plan

CITY OF BRAWLEY
IMPERIAL COUNTY, CALIFORNIA
December 20, 2005

The City Council of the City of Brawley does hereby resolve as follows:

WHEREAS the California Legislature enacted Assembly Bill 797 (Water Code Section 10610 et seq., known as the Urban Water Management Planning Act) during the 1983-1984 Regular Session, and as amended subsequently, which mandates that every supplier providing water for municipal purposes to more than 3,000 customers or supplying more than 3,000 acre feet of water annually, prepare an Urban Water Management Plan, the primary objective of which is to plan for the conservation and efficient use of water; and

WHEREAS the City is an urban supplier of water providing water to a population over 17,000, and

WHEREAS the Plan shall be periodically reviewed at least once every five years, and that the City shall make any amendments or changes to its plan which are indicated by the review; and

WHEREAS the Plan must be adopted by December 31, 2005, after public review and hearing, and filed with the California Department of Water Resources within thirty days of adoption; and

WHEREAS the City has therefore, prepared and circulated for public review a draft Urban Water Management Plan, and a properly noticed public hearing regarding said Plan was held by the City Council on December 20th, 2005, and

WHEREAS the City of Brawley did prepare and shall file said Plan with the California Department of Water Resources by January 20th;

NOW, THEREFORE, BE IT RESOLVED by the City Council of the City of Brawley as follows:

1. The 2005 Urban Water Management Plan is hereby adopted and ordered filed with the City Clerk; The Mayor is hereby authorized and directed to file the 2005 Urban Water Management Plan with the California Department of Water Resources within 30 days after this date;

The Mayor is hereby authorized and directed to implement the Water Conservation Programs as set forth in the 2005 Urban Water Management Plan, which includes water shortage contingency analysis and recommendations to the City Council regarding necessary procedures, rules, and regulations to carry out effective and

equitable water conservation programs;

In a water shortage, the Mayor is hereby authorized to declare a Water Shortage Emergency according to the Water Shortage Stages and Triggers indicated in the Plan, and implement necessary elements of the Plan;

The Mayor shall recommend to the City Council additional regulations to carry out effective and equitable allocation of water resources; and

The attached budget is approved and authorized for implementation.

ADOPTED this 19th day of December 2005, by the following vote:

AYES:

NOES:

ABSENT:

ABSTAIN:

ATTEST: _____

City Clerk,

City Council Members (indicate names)

Mayor

Director, Public Works Department

Chief, Water Department

Approved as to Form and Legality: _____
City Attorney

APPENDIX C

BRAWLEY'S WATER SHORTAGE INFORMATION

No-Waste Ordinance

Resolution to Declare a Water Shortage Emergency

Moratorium on New Connections during a Declared Water Shortage

Water Shortage Rationing Allocation Method

No Waste Ordinance

CITY OF BRAWLEY
IMPERIAL COUNTY, CALIFORNIA

Date

The City Council of the City of Brawley does hereby resolve as follows:

The Municipal Code of the City of Brawley is hereby amended by adding Section XX to Chapter XX, to read as follows:

XX-5 PROHIBITING WASTEFUL USE OF WATER

REGULATIONS AND RESTRICTIONS ON WATER USE

It is hereby resolved by the City Council that in order to conserve the City's water supply for the greatest public benefit and to reduce the quantity of water used by the City's customers, that wasteful use of water should be eliminated. Customers of the City shall observe the following regulations and restrictions on water use:

1. No customer shall waste water. As used herein, the term "waste" means:
 - a. Use of potable water to irrigate turf, ground-cover, shrubbery, crops, vegetation, and trees between the hours of 10:00 o'clock A.M. and 6:00 o'clock P.M. or in such a manner as to result in runoff for more than five (5) minutes;
 - b. Use of potable water to wash sidewalks, walkways, driveways, parking lots, open ground or other hard surfaced areas except where necessary for public health or safety;
 - c. Allowing potable water to escape from breaks within the customer's plumbing system for more than twenty-four hours after the customer is notified or discovers the break;
 - d. Washing cars, boats, trailers, aircraft, or other vehicles by hose without a shutoff nozzle and bucket except to wash such vehicles at commercial or fleet vehicle washing facilities using water recycling equipment.
 - e. Use of potable water to clean, fill or maintain decorative fountains, lakes or ponds.
2. The following restrictions are effective during a declared Water-Shortage Emergency.
 - a. No restaurant, hotel, cafe, cafeteria or other public place where food is sold, served or offered for sale, shall serve drinking water to any customer unless requested.
 - b. Use of potable water for construction, compaction, dust control, street or parking lot sweeping, building wash down where non-potable water is sufficient.
 - c. Use of potable water for sewer system maintenance or fire protection training without prior approval by the Mayor;
 - d. Use of potable water for any purpose in excess of the amount allocated.
3. Other restrictions may be necessary during a declared Water Shortage Emergency, to safeguard the adequacy of the water supply for domestic, sanitation, fire protection, and environmental requirements.

Enforcement

Any customer violating the regulations and restrictions on water use set forth in this chapter shall receive a written warning for the first such violation. Upon a second violation, the customer shall receive a written warning and the district may cause a flow-restrictor to be installed in the service. If a flow-restrictor is placed, the cost of installation and removal shall be paid by the violator. Any willful violation occurring subsequent to the issuance of the second written warning shall constitute a misdemeanor and may be referred to the City Attorney's Office for prosecution. The City may also disconnect the water service. If water service is disconnected, it shall be restored only upon payment of the turn-on charge fixed by the City Council.

Penalty for violations

Except as provided in the enforcement section for the first and second violations any person, firm, partnership, association, corporation or political entity violating or causing or permitting the violation of any of the provisions of this section or providing false information to the City in response to City's requests for information needed by the City to calculate consumer water allotments shall be guilty of a misdemeanor punishable by imprisonment in the county jail for not more that thirty days or by a fine not exceeding one thousand dollars or both. Each separate day or portion thereof in which any violation occurs or continues without a good faith effort by the responsible party to correct the violation shall constitute a separate offense and, upon conviction thereof, shall be separately punishable.

Appeals

Variances from the requirements of this Section may be granted by the City Council only after denial of a variance request by the City Manager. Appeals of variance request denials shall be made in writing to the City Clerk at least 2 weeks prior to the meeting at which they will be heard. Upon granting any appeal, the City Council may impose any conditions it determines to be just and proper. Variances granted by the City Council shall be prepared in writing and furnished to the applicant.

Remedies/Cumulative

The remedies available to the City to enforce this ordinance are in addition to any other remedies available under the City's code or any state statutes or regulations, and do not replace or supplant any other remedy, but are cumulative.

Resolution to Declare a Water Shortage Emergency

CITY OF BRAWLEY
IMPERIAL COUNTY, CALIFORNIA
Date

The City Council of Brawley does hereby resolve as follows:

PURSUANT to California Water Code Section 350 et seq., the Council has conducted duly noticed public hearings to establish the criteria under which a water shortage emergency may be declared.

WHEREAS, the Council finds, determines and declares as follows:

- (a) The City is the water purveyor for the property owners and inhabitants of Brawley;
- (b) The demand for water service is not expected to lessen.
- (c) When the potable water supply available to the City falls at or below the Stage II triggering levels described in the 2005 Urban Water Management Plan, the City will declare a water shortage emergency. The water supply would not be adequate to meet the ordinary demands and requirements of water consumers and there may be insufficient water for human consumption, sanitation, fire protection, and environmental requirements. This condition is likely to exist until groundwater contamination is remedied and/or water system damage resulting from a disaster are repaired and normal water service is restored.

NOW, THEREFORE, BE IT RESOLVED that the City Council of Brawley hereby directs the Mayor to find, determine, declare and conclude that a water shortage emergency condition exists that threatens the adequacy of water supply, until the City's water supply is deemed adequate and potable. After the declaration of a water shortage emergency, the Mayor is directed to determine the appropriate Rationing Stage and implement the City's Water Shortage Emergency Response.

FURTHERMORE, the Council shall periodically conduct proceedings to determine additional restrictions and regulations which may be necessary to safeguard the adequacy and quality of the water supply for domestic, sanitation, fire protection, and environmental requirements.

Moratorium On New Connections During A Water Shortage

CITY OF BRAWLEY
IMPERIAL COUNTY, CALIFORNIA
Date

The City Council of Brawley does hereby resolve as follows:

The Municipal Code of the City of Brawley is hereby amended to read as follows:

XX-5 MORATORIUM ON SERVICE COMMITMENTS AND CONNECTIONS

1. When the City declares a water shortage emergency, the following regulations shall become effective immediately and shall continue in full force and effect to prohibit the following while it remains in full force and effect:
 - a. The City shall not issue oral or written commitments to provide new or expanded water service, including will-serve letters.
 - b. The City shall not sell meters for water service connections, despite the prior issuance of will-serve letters or other oral or written service commitments, unless building permits have been issued.
 - c. The City shall not provide new or expanded water service connections, despite the prior issuance of will-serve letters or other oral or written service commitments and meters, unless building permits have been issued.
 - d. The City shall not provide water for use on any new plantings installed after the declaration of a Water Shortage Emergency.
 - e. The City shall not annex territory located outside the City's service boundary.
2. The following uses are exempt from the moratorium and upon application to the City shall receive necessary water service commitments and connections to receive water from the City:
 - a. Uses, including but not limited to, commercial, industrial, single and multifamily residential, for which a building permit has been issued by the City on or before the declaration of a Water Shortage Emergency.
 - b. Uses, including but not limited to, commercial, industrial, single and multifamily residential, for which a retail meter had been purchased from the City before the declaration of a Water Shortage Emergency, as evidenced by a written receipt and for which a building permit has been issued and remains in full force and effect.
 - c. Publicly owned and operated facilities, including but not limited to schools, fire stations, police stations, and hospitals and other facilities as necessary to protect the public health, safety and welfare.

Water Shortage Rationing Allocation Method

Single-family account allocations may be determined as follows: assuming 4 persons or less per home, an account would receive 11 HCF per month (68 gpcd) plus 55% of their historic use, not to exceed an upper limit. The upper limit on additional water may be 30 HCF per year (i.e., $132 \text{ HCF} + 50\% \text{ historic} \leq 162 \text{ HCF a year}$). Appeals would be available for additional people. For each additional person at a home the allotment is increased by 4 HCF per billing period (49 gcd).

Multi-residential account allocations may be determined as follows: assuming 3 persons or less per unit, accounts receive 6 HCF per unit per month (49 gcd), plus 40% of their historic use, not to exceed an upper limit. The upper limit on additional water may be 10 HCF per year per unit (i.e., $72 \text{ HCF} + 40\% \text{ historic} \leq 82 \text{ HCF a year}$). Appeals would be available for additional people. For each additional person, the allotment increases by 4 HCF per billing period (49 gcd).

Increased allocations for residential accounts would be limited to the following:

1. Greater number of residents than assumed by plan.
2. Medical conditions requiring additional water.

Commercial, Industrial and Institutional would receive a percentage reduction from historical use. The historical use period used to determine the baseline amount may vary based on specific factors. Appeals would be available for increased business, census or other factors.

APPENDIX D

Rate Stabilization Fund Discussion

Establishment of a Rate Stabilization Fund

In order to mitigate the financial impacts of a water shortage, the City is establishing an Emergency Fund. The goal is to maintain the fund at 75% of normal water department revenue. This fund will be used to stabilize rates during periods of water shortage or disasters affecting the water supply. The City will not have to increase rates as much or as often during a prolonged or severe shortage.

However, even with the emergency fund, rate increases will be necessary during a prolonged water shortage. As described in this Plan, a Stage II shortage will be accompanied by a 15-25% reduction in water deliveries while a Stage III will be accompanied by a 25 -35% reduction. The experiences of California water purveyors during the 1990-91 water shortage demonstrated that actual water use reductions by customers are usually considerably larger than those requested by the supplier. During the 1990-91 water shortage it was also politically difficult for many agencies to adopt the rate increases necessitated by a 20% to 50% reduction in sales. When a Water Shortage Emergency is declared, the supply shortage will trigger the appropriate Rationing Stage and rate increase.

Water rates increase by the following percentages when the indicated Stages are implemented:

Stage I	no rate increase
Stage II	25% increase over pre-shortage rates
Stage III	50% increase over pre-shortage rates
Stage IV	100% increase over pre-shortage rates

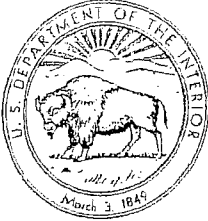
End of the Water Shortage Emergency

15% increase over pre-shortage rates (This rate increase should be re-evaluated every two years)

Most California water agencies, which experienced water shortages, found that customer demand did not return to pre-shortage levels. After a shortage, water department expenses are expected to drop below pre-shortage levels but water sales are not expected to rebound. In anticipation of reduced sales, after a declared shortage ends, the City's rates will be set for one year at 115% of the pre-shortage rates. Any excess revenues collected as a result of this rate adjustment will be used for the Rate Stabilization Fund.

APPENDIX E

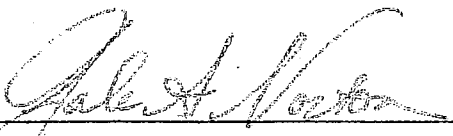
Colorado River Delivery Agreement Federal Quantification Settlement Agreement



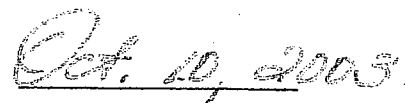
THE SECRETARY OF THE INTERIOR
WASHINGTON

Colorado River Water Delivery Agreement:
Federal Quantification Settlement Agreement
for purposes of Section 5(B) of
Interim Surplus Guidelines

Approved:



Gale A. Norton
Secretary of the Interior



Date

COLORADO RIVER WATER DELIVERY AGREEMENT

The United States by and through the Secretary of the Interior (Secretary) hereby enters into this Colorado River Water Delivery Agreement (Agreement) with the Imperial Irrigation District (IID), the Coachella Valley Water District (CVWD), The Metropolitan Water District of Southern California (MWD) (these three districts are collectively referred to herein as the Districts), and the San Diego County Water Authority (SDCWA). The Secretary, IID, CVWD, MWD and SDCWA hereby agree as follows:

RECITALS

- A. By regulations dated September 28, 1931, the Secretary incorporated the schedule of priorities provided in the Seven Party Agreement dated August 18, 1931, and established priorities One through Seven for use of the waters of the Colorado River within the State of California. The regulations were promulgated pursuant to the Boulder Canyon Project Act (BCPA) and required that contracts be entered into for the delivery of water within those priorities.
- B. The Secretary has entered into contracts with, among others, the Palo Verde Irrigation District (PVID), IID, CVWD, and MWD, for the delivery of Colorado River water pursuant to Section 5 of the BCPA (Section 5 Contracts). Under those Section 5 Contracts, PVID, IID, CVWD and MWD have certain rights to the delivery of Colorado River water, which for PVID and IID include the satisfaction of present perfected rights in accordance with Section 6 of the BCPA. MWD and CVWD also have surplus water delivery contracts with the Secretary.
- C. IID, CVWD, MWD and SDCWA have entered into agreements relating to, among other matters, their respective beneficial consumptive use of Colorado River water and desire that, for the term of this Agreement, Colorado River water be delivered by the Secretary in the manner contemplated in this Agreement.
- D. The Secretary has the authority to enter into this Agreement on behalf of the United States pursuant to the BCPA, the 1964 Decree in Arizona v. California, and other applicable authorities.

OPERATIVE TERMS

1. WATER DELIVERY CONTRACTS

- a. Priorities 1, 2, 3(b), 6(b), and 7 of current Section 5 Contracts for the delivery of Colorado River water in the State of California and Indian and miscellaneous Present Perfected Rights (PPRs) within the State of California and other existing surplus water contracts are not affected by this Agreement.

- b. The Secretary agrees to deliver Colorado River water in the manner set forth in this Agreement during the term of this Agreement. The Secretary shall cease delivering water pursuant to this Agreement at the end of the term of this Agreement; provided, however, that the Secretary's delivery commitment to the San Luis Rey Indian Water Rights Settlement Parties (SLR) shall not terminate at the end of the term but shall instead continue, pursuant to Section 106 of Public Law 100-675, 102 Stat. 4000 et seq., as amended, subject to the terms and conditions of any applicable agreement to which the Secretary is a party concerning the allocation of water to be conserved from the lining of the All-American and Coachella Canals.
- c. The Districts' respective Section 5 Contracts shall remain in full force and effect and, with this Agreement, shall govern the delivery of Colorado River water.

2. QUANTIFICATION OF PRIORITY 3(a)

- a. Except as otherwise determined under the Inadvertent Overrun and Payback Policy identified in Section 9 of this Agreement, the Secretary shall deliver Priority 3(a) Colorado River water to IID in an amount up to but not more than a consumptive use amount of 3.1 million acre-feet per year (AFY) less the amount of water equal to that to be delivered by the Secretary for the benefit of CVWD, MWD, SDCWA, SLR, and Indian and miscellaneous PPRs as set forth in Exhibits A and B hereto. Colorado River water acquired by IID after the date of this Agreement, and where necessary approved by the Secretary, shall not count against this cap.
- b. Except as otherwise determined under the Inadvertent Overrun and Payback Policy, the Secretary shall deliver Priority 3(a) Colorado River water to CVWD in an amount up to but not more than a consumptive use amount of 330,000 AFY less the amount of water equal to that to be delivered by the Secretary for the benefit of IID, MWD, SDCWA, SLR, and Indian and miscellaneous PPRs as set forth in Exhibits A and B hereto. Colorado River water acquired by CVWD in any transaction to the extent agreed upon prior to or concurrent with the execution of this Agreement by IID and MWD and, where necessary approved by the Secretary, shall not count against this cap.

3. QUANTIFICATION OF PRIORITY 6(a)

- a. Subject to any rights that PVID may have, and except as otherwise provided under the Interim Surplus Guidelines, or under the agreements contemplated by those guidelines, the Secretary shall deliver Priority 6(a) water to MWD, IID and CVWD in the following order and consumptive use volumes: (i) 38,000 AFY to MWD; (ii) 63,000 AFY to IID; and (iii) 119,000 AFY to CVWD, or as those parties may agree to occasionally forbear.
- b. Any water not used by MWD, IID or CVWD as set forth above will be available to satisfy the next listed amount in Section 3.a. above. Any additional water available for Priority 6(a) shall

be delivered by the Secretary in accordance with IID and CVWD's entitlements under their respective Section 5 Contracts in effect as of the date of this Agreement.

4. TRANSFERS AND OTHER WATER DELIVERY COMMITMENTS

- a. The Secretary shall deliver IID's Priority 3(a) entitlement for the benefit of IID and others as specified in Exhibits A and B hereto and in the amounts and to the points of delivery set forth therein.
- b. The Secretary shall deliver CVWD's Priority 3(a) entitlement for the benefit of the CVWD and others as specified in Exhibits A and B hereto and in the amounts and to the points of delivery set forth therein.
- c. At SDCWA's election, the Secretary shall deliver water made available for SDCWA's benefit as set forth in Exhibits A and B hereto to the intake facilities for the Colorado River Aqueduct and SDCWA may then exchange up to 277,700 AFY of Colorado River water with MWD at Lake Havasu.
- d. If in any given calendar year that the use of Colorado River water in accordance with Priorities 1 and 2, together with the use of Colorado River water on PVID Mesa lands in accordance with Priority 3(b), exceeds the consumptive use amount of 420,000 AFY, the Secretary will reduce the amount of water otherwise available to MWD in Priorities 4, 5 or 6(a) by the amount that such use exceeds 420,000 AFY. To the extent that the amount of water used in accordance with Priorities 1, 2 and 3(b) is less than 420,000 AFY, the Secretary shall deliver to MWD the difference.
- e.
 1. The Secretary shall deliver to CVWD at Imperial Dam the consumptive use amount of 20,000 AFY or such lesser consumptive use amount as may be requested by CVWD of Priority 3(a) Colorado River water made available to MWD under the Agreement for the Implementation of a Water Conservation Program and Use of Conserved Water between IID and MWD dated December 22, 1988, as amended.
 2. Beginning in 2048 and in each year thereafter, the Secretary shall deliver to CVWD at Imperial Dam the consumptive use amount of 50,000 AFY or such lesser consumptive use amount as may be requested by CVWD from the Colorado River water available to MWD.
 3. When requested by MWD for the purpose of satisfying an exchange obligation to CVWD under an agreement between CVWD and MWD for exchange of CVWD's State Water Project water, the Secretary shall deliver to CVWD at Imperial Dam the consumptive use amount of 135,000 AFY or such lesser amount as may be requested by MWD.

- f. CVWD may decline to take a portion of the water to be conserved by IID for CVWD. In this event, the Secretary shall instead deliver such portion of the water to IID or MWD, or to other unspecified water users provided, further, that any such delivery to an unspecified user is, where necessary, subject to Secretarial approval.
- g. Colorado River water will be made available to MWD through forbearance under the existing priority system as a result of a proposed land management program between PVID landowners and MWD. Neither IID nor CVWD will make any claim to or object to delivery to MWD of PVID program water to the extent agreed upon prior to or concurrent with the execution of this Agreement by IID and CVWD. If the transfer of PVID program water is not implemented, then IID has agreed to transfer for the benefit of MWD/SDCWA amounts necessary to meet the minimum Benchmark Quantities as set forth in Section 5(C) of the Interim Surplus Guidelines, not to exceed 145,000 AF in the aggregate.
- h. CVWD may utilize Colorado River water outside of Improvement District No. 1 to the extent consented to and agreed upon prior to or concurrent with the execution of this Agreement by IID and MWD.
- i. Notwithstanding the transfers set forth in this section and Exhibit B, IID, CVWD, MWD and SDCWA recognize and agree that at the conclusion of the effective period of the Interim Surplus Guidelines, they shall have implemented sufficient measures to be able to limit total uses of Colorado River water within California to 4.4 million AFY, unless the Secretary determines a surplus under a 70R strategy.

5. SHORTAGES

- a. The Secretary's authority under II.B.3 of the 1964 Decree in Arizona v. California is not limited in any way by this Agreement.
- b. If for any reason there is less than 3.85 million AFY available under Priorities 1, 2 and 3 during the term of this Agreement, any water which is made available by the Secretary to IID and CVWD shall be delivered to IID, CVWD, MWD, and SDCWA in accordance with the shortage sharing provisions agreed upon prior to or concurrent with the execution of this Agreement by IID, CVWD, MWD and SDCWA.

6. TERM

- a. This Agreement will become effective upon execution of this Agreement by all Parties.
- b. This Agreement will terminate on December 31, 2037, if the 1998 IID/SDCWA transfer program terminates in that year.

- c. If this Agreement does not terminate on December 31, 2037, then this Agreement will terminate on December 31, 2047 unless extended by agreement of all parties until December 31, 2077, in which case this Agreement will terminate on December 31, 2077.
- d. The Secretary's delivery commitment to the SLR and the Districts' recognition and acceptance of that delivery commitment, shall not terminate but shall instead continue, pursuant to Section 106 of Public Law 100-675, 102 Stat. 4000 et seq., as amended.

7. INTERIM SURPLUS GUIDELINES

The Secretary finds that execution of this Agreement constitutes "all required actions" that the relevant California Colorado River water contractors are required to undertake pursuant to Section 5(B) of the Interim Surplus Guidelines. Accordingly, upon execution of this Agreement by all parties, the interim surplus determinations under Sections 2(B)(1) and 2(B)(2) of the Interim Surplus Guidelines are reinstated.

8. BENCHMARKS FOR THE STATE OF CALIFORNIA'S AGRICULTURAL USE

- a. The parties to this Agreement agree to carry out the transfers identified in Section 4 above and in Exhibit A hereto in accordance with the schedule set forth in Exhibit B hereto. Nothing in this Agreement authorizes or precludes carrying out the transfers on a timetable sooner than provided in the schedule set forth in Exhibit B hereto. The transfers in the schedule set forth in Exhibit B hereto are undertaken to allow California agricultural usage (by PVID, Yuma Project Reservation Division, IID, and CVWD) plus 14,500 af of PPR use to be at or below the Benchmark Quantities as set forth in Section 5(C) of the Interim Surplus Guidelines. Nothing in this Agreement authorizes or precludes additional transfers of Colorado River water as agreed upon prior to or concurrent with the execution of this Agreement by the Districts to meet the Benchmark Quantities as set forth in Section 5(C) of the Interim Surplus Guidelines. All determinations by the Secretary with respect to this section shall be based upon Decree Accounting. Repayment of overrun amounts shall not count toward compliance with the transfers in the schedule set forth in Exhibit B hereto or toward compliance with the Benchmark Quantities set forth in Section 5(C) of the Interim Surplus Guidelines.
- b. In the event that i) the transfers are carried out as set forth in the schedule in Exhibit B hereto or additional Colorado River transfers as agreed upon prior to or concurrent with the execution of this Agreement by the Districts are carried out and ii) California's Agricultural usage plus 14,500 af of PPR use is at or below the Benchmark Quantities as set forth in Section 5(C) of the Interim Surplus Guidelines, the provisions of this subparagraph shall apply.
 - 1. Notwithstanding the provisions of the November 22, 2002 Supplement to the 2002 Annual Operating Plan, any existing overruns in calendar years 2001 and 2002 by parties to this Agreement must be repaid within an eight-year period beginning in calendar year 2004 in

accordance with the schedule attached in Exhibit C hereto, except that in the event that any Annual Operating Plan 24-Month Study indicates that a shortage will occur within months 13 through 24, any remaining balance of the 2001 and 2002 overruns shall be fully repaid during the next calendar year. Repayment of any overruns other than from calendar years 2001 and 2002 shall be pursuant to the Inadvertent Overrun and Payback Policy identified in Section 9 below.

2. The Secretary has considered the quantification of Priority 3(a) as set forth in Section 2 of this Agreement and the water transfers set forth in the schedule in Exhibit B hereto. These water transfers were developed to assist the Districts and SDCWA to meet the provisions of Section 4(i) of this Agreement and to reduce the occurrence of future reasonable and beneficial use reviews under 43 C.F.R. Pt. 417 to unique circumstances. These water transfers are based upon water conservation activities to be implemented over the term of this Agreement. For these reasons, the Secretary does not anticipate any further review of the reasonable and beneficial use of Colorado River water by IID pursuant to the annual 43 C.F.R. Pt. 417 reviews that are conducted during the initial term of this Agreement as set forth in Section 6.b. (December 31, 2037). Should the Secretary engage in any further review of the reasonable and beneficial use of Colorado River water by IID pursuant to 43 C.F.R. Pt. 417 under this Section, the Secretary will base her decision on (i) the purpose of the quantification of Priority 3(a) and the reductions and transfers set forth on Exhibit B hereto, and (ii) the implementation of the water transfers by IID as set forth in the schedule in Exhibit B, in addition to the consideration of the factors in 43 C.F.R. § 417.3

- c. Notwithstanding any other provision of this Agreement, and in addition to any applicable provisions of the Interim Surplus Guidelines, in the event that either i) the transfers are not carried out as set forth in Exhibit B hereto or additional Colorado River transfers as agreed upon prior to or concurrent with the execution of this Agreement by the Districts are not carried out, or ii) California's Agricultural usage plus 14,500 af of PPR use is above the Benchmark Quantities as set forth in Section 5(C) of the Interim Surplus Guidelines, the provisions of this subparagraph shall apply.

1. For each District that has not implemented the water transfers to which it is a party upon the agreed upon schedule as set forth in Exhibit B hereto, the Inadvertent Overrun and Payback Policy identified in Section 9 below will be immediately suspended. During suspension of the Inadvertent Overrun and Payback Policy, for previously incurred overruns, the payback period shall be as provided in the existing Inadvertent Overrun and Payback Policy were such Policy not suspended. The Inadvertent Overrun and Payback Policy will be reinstated at such time as a District has implemented the water transfers to which it is a party upon the agreed upon schedule as set forth in Exhibit B hereto.

2. Any remaining existing overruns from calendar years 2001 and 2002 by parties to this Agreement must be repaid within a three-year period.

3. In addition to any applicable provisions of the Interim Surplus Guidelines, in the event that the transfers are not implemented in accordance with Column 23 in Exhibit B hereto, MWD shall not place any order to the Secretary for any Colorado River water otherwise available pursuant to sections 2(B)(1) and 2(B)(2) as set forth in the Interim Surplus Guidelines.

4. The Secretary anticipates that a further review of the reasonable and beneficial use of Colorado River water by the Districts will be required pursuant to the annual 43 C.F.R. Pt. 417 reviews that are conducted during the initial term of this Agreement as set forth in Section 6.b. (December 31, 2037). In any such review, the Secretary will base her decision on the factors set forth in Section 8.b.2 above as well as the basis for any District's non-implementation of the transfers set forth in Exhibit B hereto, in addition to the consideration of the factors in 43 C.F.R. § 417.3

9. INADVERTENT OVERRUN AND PAYBACK POLICY

For so long as the provisions of Section 8.b of this Agreement are applied, the Secretary will not materially modify the Inadvertent Overrun and Payback Policy for a 30-year period, absent extraordinary circumstances such as significant Colorado River infrastructure failures, and subject to the provisions of Section 5 of this Agreement. In the event that extraordinary circumstances arise, the Secretary will consult with the Districts and other interested parties before initiating any material change.

10. ADDITIONAL PROVISIONS

- a. Imperial Irrigation District v. United States of America, et al., CV 0069W (JFS) (D. Cal. filed January 10, 2003) (JFS), is dismissed pursuant to Stipulation under Fed. R. Civ. P. 41(a)(1). Nothing in this Agreement shall affect the preclusive and non-preclusive effects of the Stipulation during the term of this Agreement and thereafter.
- b. Upon dismissal of Imperial Irrigation District v. United States, et al., as provided in subsection 10(a) above, the Secretary will irrevocably terminate the *de novo* "Recommendations and Determinations Authorized by 43 C.F.R. Pt. 417, Imperial Irrigation District" for 2003, and IID's water order for 2003 is approved subject to the terms of this Agreement.
- c. 1. IID, CVWD, MWD, and SDCWA do not agree on the nature or scope of rights to the delivery, use or transfer of Colorado River water within the State of California. Furthermore, the Districts and SDCWA agree not to use this Agreement or any provision hereof, as precedence for purposes of evidence, negotiation or agreement on any issue of California or federal law in any administrative, judicial or legislative proceeding, including without limitation,

any attempt by IID and SDCWA to obtain further approval of any water transaction.

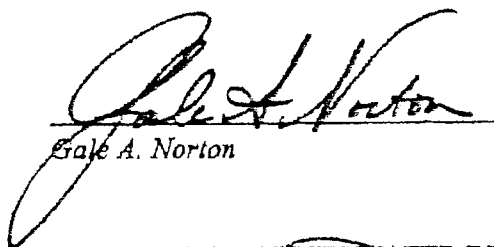
2. The terms of this Agreement do not control or apply to the nature or scope of rights to the delivery, use or transfer of Colorado River water within the State of California, except as those rights are defined and addressed in this Agreement during the term hereof.

3. By executing this Agreement, the Districts and SDCWA are not estopped from asserting in any administrative, judicial or legislative proceeding, including those involving the United States, that neither this Agreement nor any of its terms was necessary or required to effectuate the transactions contemplated herein.

4. Nothing herein waives the ability of any party to challenge the exercise of particular miscellaneous and Indian PPRs.

- d. This Agreement shall not be deemed to be a new or amended contract for the purpose of Section 203(a) of the Reclamation Reform Act of 1982 (Public Law 97-293, 93 Stat. 1263).
- e. This Agreement does not (i) guarantee or assure any water user a firm supply for any specified period, (ii) change or expand existing authorities under applicable federal law, except as specifically provided herein with respect to the Districts, (iii) address interstate distribution of water, (iv) change the apportionments made for use within individual States, (v) affect any right under the California Limitation Act (Act of March 4, 1929; Ch. 16, 48th Sess.), or any other provision of applicable federal law.
- f. This Agreement is not intended nor shall it be construed to create any third party beneficiary rights to enforce the terms of this Agreement in any person or entity that is not a party.
- g. Each party to this Agreement represents that the person executing this Agreement on behalf of such party has full power and authority to do so, and that his/her signature is legally sufficient to bind the party on whose behalf he/she is signing.
- h. This Agreement shall remain in full force and effect according to its terms regardless of whether the Interim Surplus Guidelines are in effect or terminated.
- i. This Agreement with the United States is subject to and controlled by the Colorado River Compact of 1922.

UNITED STATES SECRETARY OF THE INTERIOR


Gale A. Norton

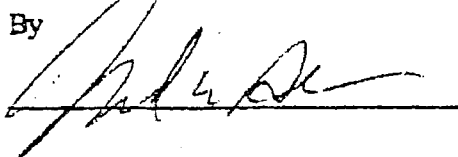
Oct. 10, 2003
Date

COACHELLA VALLEY WATER DISTRICT

By 
General Manager/Chief Engineer

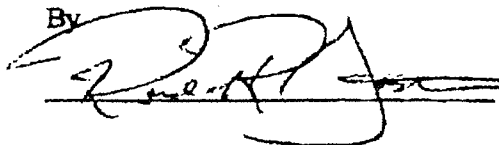
10/10/03
Date

IMPERIAL IRRIGATION DISTRICT

By 

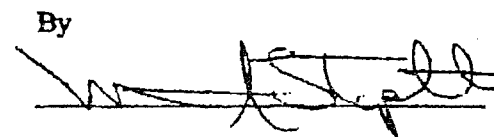
10-10-03
Date

THE METROPOLITAN WATER DISTRICT OF SOUTHERN CALIFORNIA

By 

10/10/03
Date

SAN DIEGO COUNTY WATER AUTHORITY

By 

10-10-03
Date

Exhibit A: Delivery of Priority 3(a) consumptive use entitlement to the Imperial Irrigation District and the Coachella Valley Water District

Imperial Irrigation District

The Secretary of the Interior shall deliver Imperial Irrigation District's Priority 3(a) consumptive use entitlement under this Colorado River Water Delivery Agreement, pursuant to this Exhibit A and Exhibit B hereto as follows:

Delivered to (entity):	At (point of diversion):	Amount not to exceed (af):	Notes
CVWD	Imperial Dam	103,000	---
MWD	Lake Havasu	110,000	1
SDCWA	Lake Havasu	56,200	2
SDCWA	Lake Havasu	200,000	3
SLR	<i>see note 4</i>	<i>see note 4</i>	4
Misc. & Indian PPRs	Current points of delivery	11,500	5
For benefit of MWD/SDCWA	Lake Havasu	145,000	6
IID	Imperial Dam	Remainder	---
IID's Priority 3(a) Total		3,100,000	---

Notes to Imperial Irrigation District:

1. Agreement for the Implementation of a Water Conservation Program and Use of Conserved Water, dated December 22, 1988; Approval Agreement, dated December 19, 1989. Of amount identified: up to 90,000 af to MWD and 20,000 af to CVWD.
2. Water conserved from the construction of a new lined canal parallel to the All-American Canal from Pilot Knob to Drop 3.
3. Agreement for Transfer of Conserved Water, dated April 29, 1998, as amended. As set forth in Exhibit B, delivery amounts shall be 205,000 AF in calendar year 2021 and 202,500 AF in calendar year 2022.
4. Water conserved from All-American Canal lining project and made available for benefit of San Luis Rey Settlement Parties under applicable provisions of Pub. L. No. 100-675, as amended. Quantity may vary, not to exceed 16,000 afy, as may the point of diversion, subject to the terms of the Allocation Agreement.
5. Water to be delivered to miscellaneous and Indian PPRs identified in the Decree in Arizona v. California, as supplemented. The delivery of water will be to current points of delivery unless modified in accordance with applicable law.
6. As provided in subsection 4(g) of this Agreement.

Coachella Valley Water District

The Secretary of the Interior shall deliver Coachella Valley Water District's Priority 3(a) consumptive use entitlement under this Colorado River Water Delivery Agreement pursuant to this Exhibit A and Exhibit B hereto as follows:

Delivered to (entity):	At (point of diversion):	Amount not to exceed (af):	Notes
SLR	<i>see note 1</i>	<i>see note 1</i>	1
SDCWA	Lake Havasu	21,500	2
Misc. & Indian PPR	Current points of delivery	3,000	3
CVWD	Imperial Dam	Remainder	---
Coachella Valley Water District's Priority 3(a) Total		330,000	---

Notes:

1. Water conserved from Coachella Canal lining project and made available for benefit of San Luis Rey Settlement Parties under applicable provisions of Pub. L. No. 100-675, as amended. Quantity may vary, not to exceed 16,000 afy, as may the point of diversion, subject to the terms of the Allocation Agreement.
2. Water conserved from lining the unlined portion of the Coachella Canal.
3. Water to be delivered to miscellaneous and Indian PPRs identified in the Decree in Arizona v. California, as supplemented. The delivery of water will be to current points of delivery unless modified in accordance with applicable law.

In Thousands of Acre-feet

	0	0	0	11.9	409.2	2810.8	330	26	3	29	100	20	421
1	Exhibit B is independent of increases and reductions as allowed under the Inadvertent Overtun and Payback Policy.												
2	Any higher use covered by MWD, any lesser use will produce water for MWD and help satisfy ISG Benchmarks and Annual Targets.												
3	IID/MWQD 1988 Conservation Program conserves up to 110,000 APY and the amount is based upon periodic verification. Of amount conserved, up to 20,000 APY to CYWMD (column t9), which does not count toward ISG Benchmarks and Annual Targets, and remainder in MWVD.												
4	Ramp-up amounts may vary based upon construction progress, and final amounts will be determined by the Secretary pursuant to the Allotment Agreement. Any amount identified in Exhibit B is to be used for future conservation purposes.												
								3,466.3					
								3,466.3					

Exhibit C: Payback Schedule of Overruns for Calendar Years 2001 and 2002

<i>Year</i>	<i>IID</i>	<i>CIWD</i>	<i>MWD</i>	<i>Total</i>
2004	18,900	9,100	11,000	39,000
2005	18,900	9,100	11,000	39,000
2006	18,900	9,100	11,100	39,100
2007	18,900	9,100	11,100	39,100
2008	18,900	9,200	11,100	39,200
2009	18,900	9,200	11,100	39,200
2010	19,000	9,200	11,100	39,300
2011	19,000	9,200	11,100	39,300
Cumulative	151,400	73,200	88,600	313,200

Note: Each district may, at its own discretion, elect to accelerate paybacks to retire its payback obligation before the end of the eight-year period ending in calendar year 2011. Each district's payback obligation is subject to acceleration in anticipation of a shortage in the Lower Colorado River Basin as provided for in section 8(b).

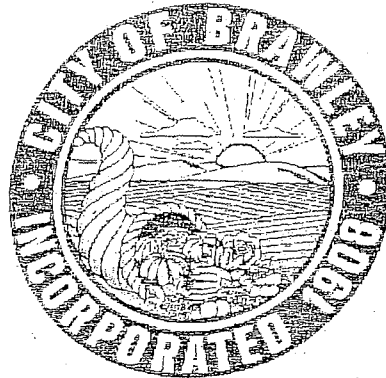
APPENDIX F

City of Brawley Water Cross-Connection Control Program

● APPENDIX G

City of Brawley Water Conservation Program – Final Report June 12, 2001

City of Brawley



Water Conservation Program

Final Report

June 12, 2001

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1

Section
One

Section 1

Introduction

Introduction

The City of Brawley (Brawley) is a California desert community of approximately 22,000 inhabitants. Brawley has an area of 6 square miles and approximately one-half of the City has a combined sanitary sewer and storm drain system. Brawley does not have a metered potable water system, with the exception of a few meters that were installed in recent years. The City charges it's water and wastewater customers a monthly flat rate based on land-use. The rate structure classifies water customer into residential and seven commercial and miscellaneous categories.

Brawley has received a monetary grant from the Border Environment Infrastructure Fund, administered by the North American Development Bank (NADB) for the expansion of the City's Wastewater Treatment Plant and its Water and Sewer Line Replacement Program. As part of the Agreement between the Environmental Protection Agency (EPA), the NADB, and Brawley, the City has agreed to adopt a Water Conservation Program (Program). In addition, the City and Department of Health Services (DOHS) are currently negotiating for a loan from the State of California. Part of the DOHS stipulations for the loan requires a Water Conservation Program to be in place. The agreement between Brawley and NADB indicates that a Conservation Program is to be submitted no later than May 31, 2001 for EPA's review and approval. Brawley's City council is scheduled to adopt the Program on June 19, 2001.

Community Profile

Geography and Climate

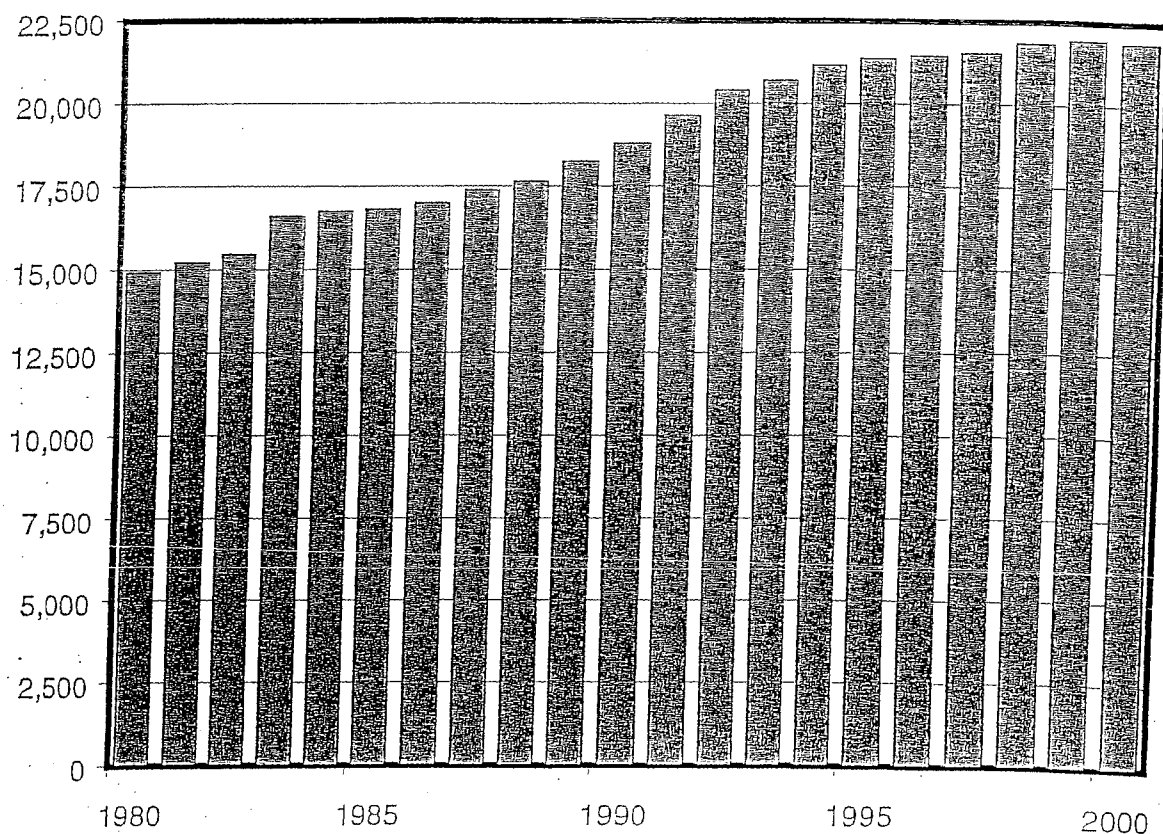
The City of Brawley is located in the far southeastern corner of Imperial County, California, in the lower Colorado Desert. It lies ten miles southeast of the Salton Sea, which has an elevation of -254 feet and is one of the lowest and hottest points in the country (USGS, 2001). Brawley is a few miles north of Interstate 8, and lies at the confluence of State Routes 86 and 111, a railroad line, and the New River. It is the central, and third largest, of seven incorporated cities and numerous smaller communities that have grown up around Colorado River-fed agriculture between the Salton Sea and Mexico. The area is flat or rolling low desert, and the majority has been cultivated. The two larger cities in the area include El Centro and Calexico.

Climate is hot, dry summers and mild to cold, dry winters. The Western Regional Climate Center (WRCC, 2001) has recorded a mean annual rainfall of 2.7 inches since 1927. Only about 50% of the annual rainfall comes in the winter months of December to March. The next wettest months are August, September and October, due to desert thunderstorms which are sudden, light to very heavy, and sporadic in their location. Despite the low rainfall, Brawley's green landscape can be distinguished from a distance; evidence of an abundance of water in a desert setting.

Population

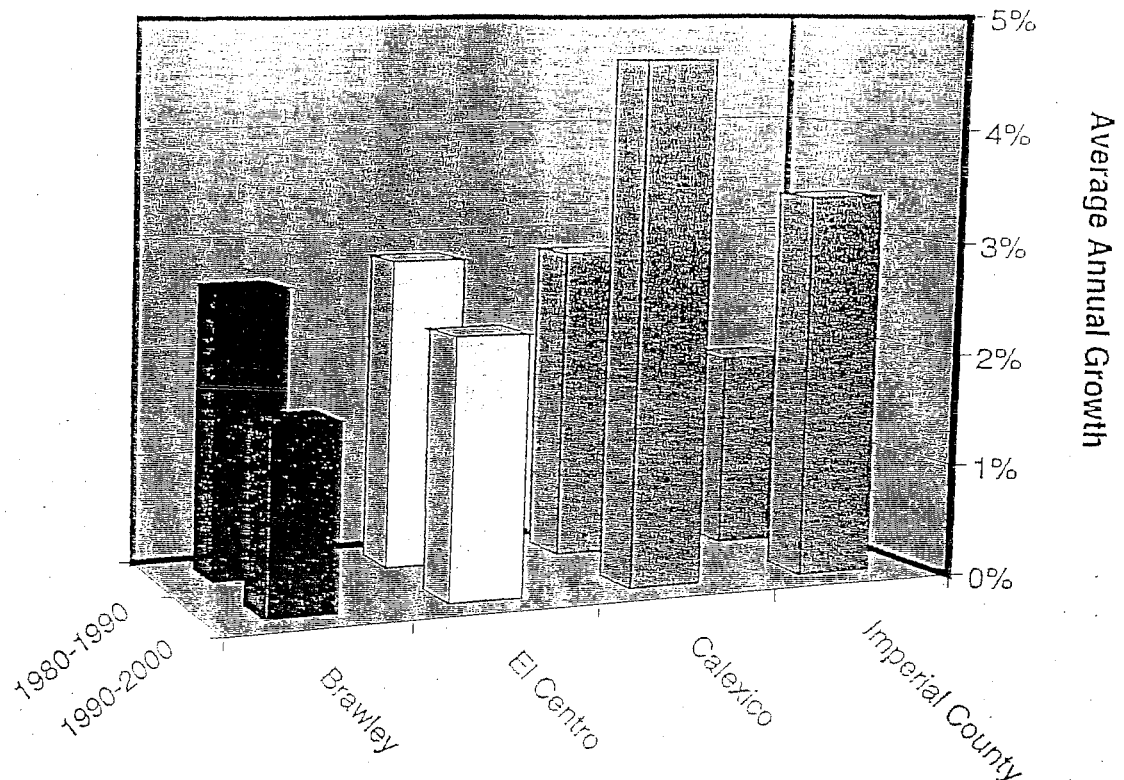
US Census and California Department of Finance (DOF) data from the last 20 years indicates that growth has been sporadic throughout Imperial County, especially over the last 5 or 6 years. Since 1995, most communities have experienced less than 1% annual growth. However, population countywide increased faster in the 1990s than in the 1980s. Brawley's population was 14,900 in 1980, growing to almost 19,000 in 1990. DOF estimates show Brawley's 2000 population at just about 22,000. Figure 1-1 shows Brawley's population from 1980 to 2000. As seen from the chart, Brawley experienced its greatest growth in the late-1980s.

Figure 1-1
City of Brawley Population



Brawley's fast population growth continued to about 1995, and then started to level off. Average annual growth rates indicate that only Brawley and El Centro had lower average growth rates in the decade of the 90s than the decade of the 80s. Figure 1-2 compares the average annual growth rates for Brawley, El Centro, Calexico and Imperial County as a whole.

Figure 1-2
Population Growth in Imperial County



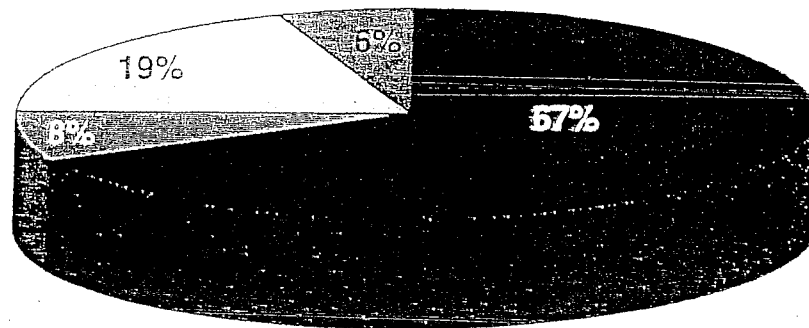
In 1990, 24% of Brawley's population lived in groups of 5 or more, 55% more than 1980, and was the fastest growing group in 1990. Student populations have dropped 4% between 1994 and 2000. Therefore, the make-up of larger groups is believed to be changing from families to related and un-related adult family groups. 1989 median household income was \$22,365. Median prices for dwellings were \$98,000 for single-family houses, \$363 to rent a one-bedroom, and \$675 to rent a two-bedroom unit.

Housing

Understanding the housing supply mix within a community is very useful in water demand forecasting. Detached single-family homes, especially for moderate and upper incomes, are more likely to have significant non-essential indoor and outdoor water use. Indoor appliances such as whirlpools, and outdoor pools, larger gardens, and lawns, account for most of this extra water use. Brawley's current housing mix is approximately 67% single-family dwellings, 27% multifamily dwellings and 6% mobile homes (see Figure 1-3). The housing mix has not changed significantly over the past 10 years though there has been a slight increase (2%) in the percentage of single-family dwellings. Persons per household in Brawley increased from 3.23 in

1990 to 3.34 in 1999, and then dropped to 3.32 in 2000, possibly due to negative growth.

Figure 1-3
Mix of Housing in City of Brawley



- | | |
|--------------------------|---------------------------|
| ■ Single-Family | ■ MultiFamily (2-4 units) |
| □ MultiFamily (5+ units) | ■ Mobile homes |

Industry

The employment base in Brawley is largely agriculture-related industries, Salton Sea-related recreation, and service industries to meet general population and visitor needs.

Specific non-residential water customers include:

- Pioneer Memorial Hospital
- Major Industry:
 - Malan Street Cooling
 - Cream of the Crop (produce handling)
 - Whitted Ice Company
 - Sahara Packing (produce handling)
 - Green Valley Farms (produce handling)
 - Bottling plant
- Restaurants

- Schools
- Motels
- Municipal government

A fairly large (580 acres) mixed-use development is in planning for Brawley. Luckey Ranch, if built according to plan, would add about 4,500 residents and 340 acres of commercial, industrial and public facilities. The proposed development would surround the Municipal Airport. Industrial and commercial impacts on water demand from Luckey Ranch were projected to begin in 2000, and residential water use is projected to begin before 2010. Combined with other planned or zoned developments, Brawley is expected to have a full build-out population of about 42,000.

Purpose of Report

The purpose of this report is to evaluate opportunities for water conservation for Brawley and make specific recommendations as to which conservation measures make the most sense for implementation. It is expected that Brawley will use this information to prepare a water conservation program for City adoption.

2

Section Two

Section 2

Water Supply and Demand

Water Supply

Brawley purchases its raw water from the Imperial Irrigation District (IID) for about \$16 per acre-foot. Brawley filters and disinfects this raw water before it is pumped and delivered into its water distribution system for domestic and municipal purposes. IID delivers raw Colorado River water imported via IID-owned and operated canals. IID delivers approximately 98% of its water to agricultural users in the Imperial Valley, with the remaining 2% going to six cities for urban use, including Brawley. IID has a senior right to California's apportionment of the Colorado River. As such, water supply availability to cities such as Brawley has not been a concern. Given the amount of water that Brawley consumes and IID's total allotment of Colorado River water, water conservation by Brawley would not reduce IID's water use significantly nor provide substantial benefits to the region in terms of water supply.

Water and Wastewater Systems

Brawley's water system is comprised of a water treatment plant, three storage facilities, two pump stations, and approximately 75 miles of 4 to 24 inch water mains. The City's current water treatment plant has a design capacity of 15 million gallons per day (MGD) to accommodate peak daily use. The plant is expandable to 30 MGD to accommodate future growth.

Brawley's wastewater system is comprised of a wastewater treatment plant and collection system that includes two lift stations and 67 miles of wastewater collection lines. The design capacity of the wastewater treatment plant is 3.9 MGD, which is currently operating in excess of 85% of its maximum capacity. This is in violation of the California Regional Water Quality Control Board requirements. The wastewater treatment plant consists of a primary treatment facility and a secondary lagoon system that provides liquid and solid treatment processes. In addition, about one-half of the City's sewer and stormwater collection is combined, which produce storm flows of 8 to 12 mgd that periodically overwhelm the hydraulic processing capacity of the wastewater treatment plant.

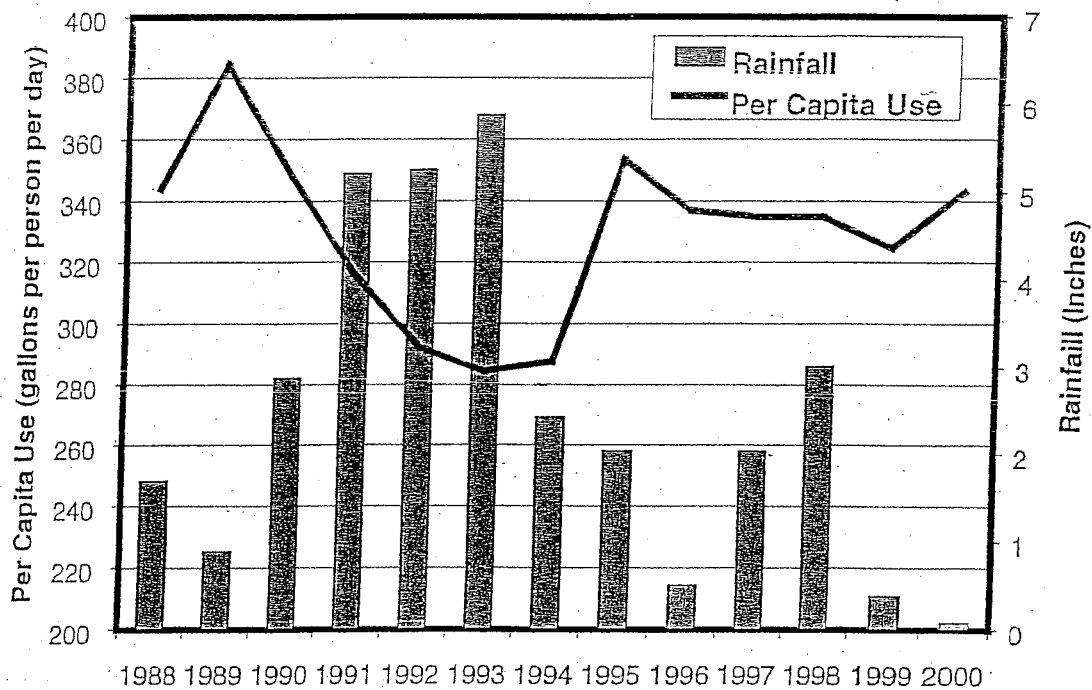
The City has received a grant through the Border Environment Infrastructure Funds, which is administered by the NADB in order to upgrade its wastewater treatment plant from 3.9 MGD to 5.9 MGD. This 2 MGD upgrade will decrease the likelihood of discharging raw sewage into the New River. It will also increase capacity so that increased flows that occur during storms can receive both primary and secondary treatment, and permit discharge of wastewater effluent that has been treated to a higher degree than presently possible. Two other wastewater upgrades (3 MGD each) have been identified to accommodate future growth.

Water Demand

Historical Demand

Brawley's historical average day water demand has ranged from low of 5.5 MGD to a high of 7.5 MGD since 1980. Peak month demands have been as high as 10.9 MGD. Since 1988, Brawley's per capita water use has ranged from a low of 284 gallons per day (gpd) in 1993 to a high of 384 gpd in 1989. It should be noted, that this per capita use represents the total water demand divided by population. Long-term growth in per capita use is therefore influenced by the mix of residential housing, the persons per household for residential customers, the mix of industrial and commercial establishments, and other factors such as income. Much of the historical annual variation in per capita water use is due to weather, however. Figure 2-1 shows historical per capita water use compared to rainfall. Generally, during times of high rainfall per capita water use falls and vice versa. There is often times a lag effect in Brawley between rainfall and water use, due to the fact that customers without meters often respond more slowly to changes in weather patterns from year to year.

Figure 2-1
City of Brawley Per Capita Water Use



Future Water Demand

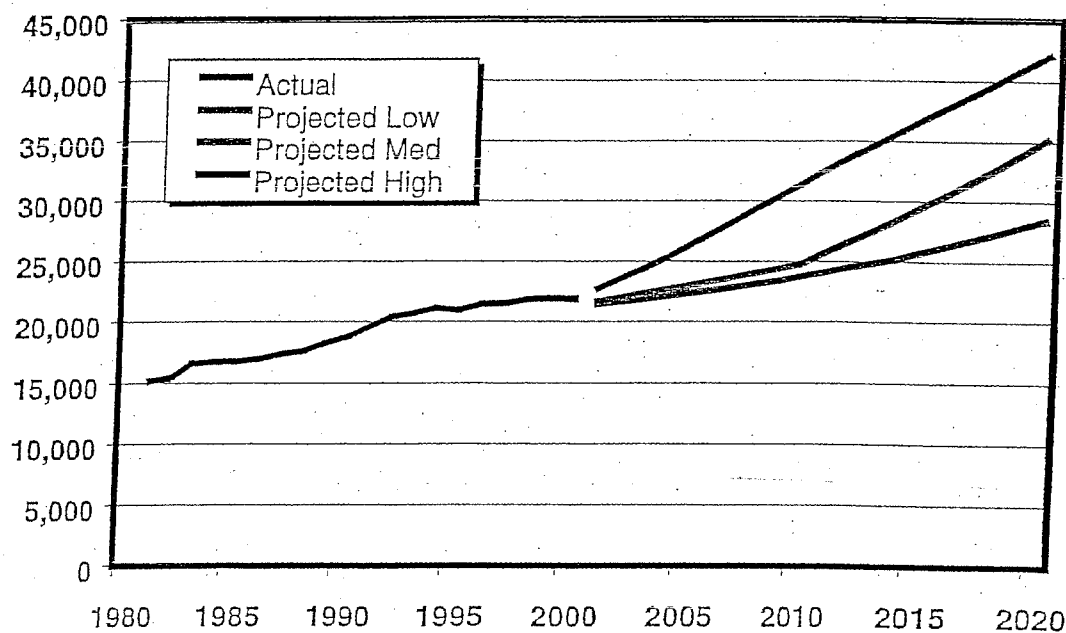
A per capita water use method was used to project future water demand for Brawley. The per capita method was used because historical data was available to generate statistical trends, and using population as a driver, the timing of future demands could be ascertained. The first step in a per capita water use forecast is to normalize

for weather. This was accomplished by correlating historical per capita use with rainfall from 1988 to 2000, using linear regression. This resulted in a negative correlation of 0.65, which indicates that when rainfall is low, per capita use is also low. The linear regression analysis indicates that if rainfall were normal (about 2.7 inches for Brawley), then per capita water use would be 327 gpd.

However, this historical estimate of per capita use does not take into account potential new industrial and commercial development in the Brawley area. One such development is the Luckey Ranch mixed industrial/residential development. It is estimated that if this development occurs, per capita use would increase by about 30 gpd. Therefore, a normal-weather per capita water use of 357 gpd was used to project future water demand for Brawley.

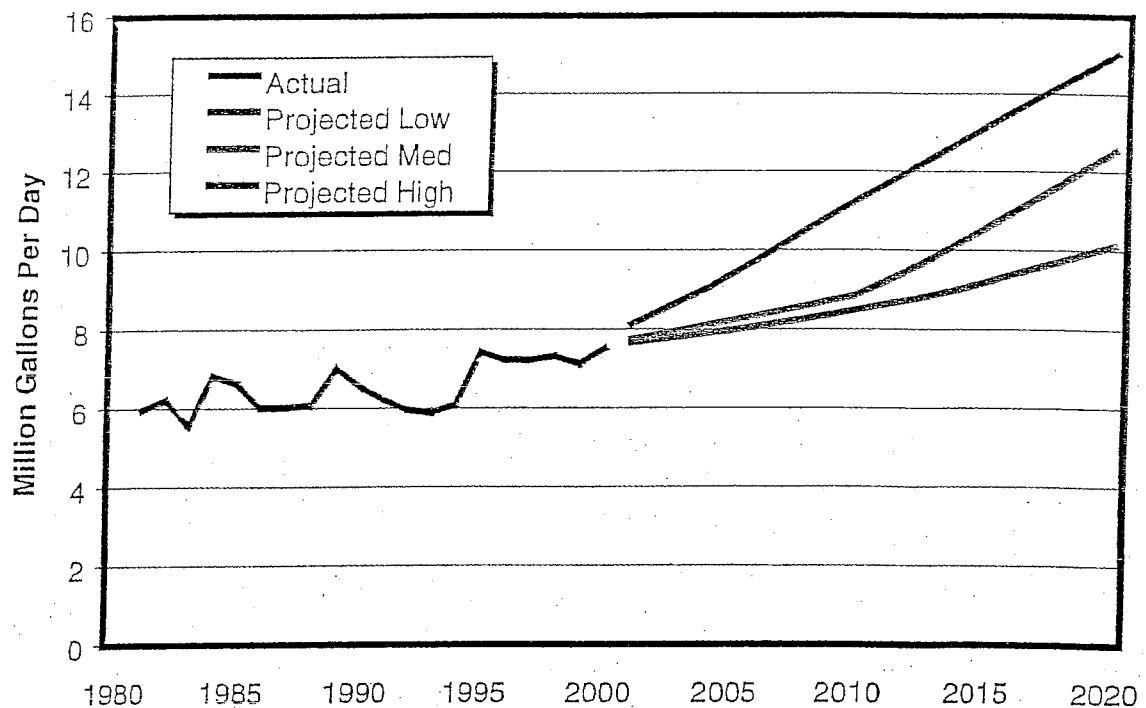
Population projections were obtained from the Step II Border Environment Cooperation Commission (BECC) Project Certification Criteria report (1999). This report prepared examined three different projections for future growth in Brawley. The highest growth projection assumes an average annual growth rate of 3.8%, and is considered to be "build-out". The lowest growth projection assumes an average annual growth rate of 1.38%, and is more representative of historical growth over the last 10 years. In addition, a mid-growth population projection was developed, which had an average annual growth rate of 2.4%. Figure 2-2 presents Brawley's historical and projected population under the three different assumptions of growth.

Figure 2-2
City of Brawley Population Projections



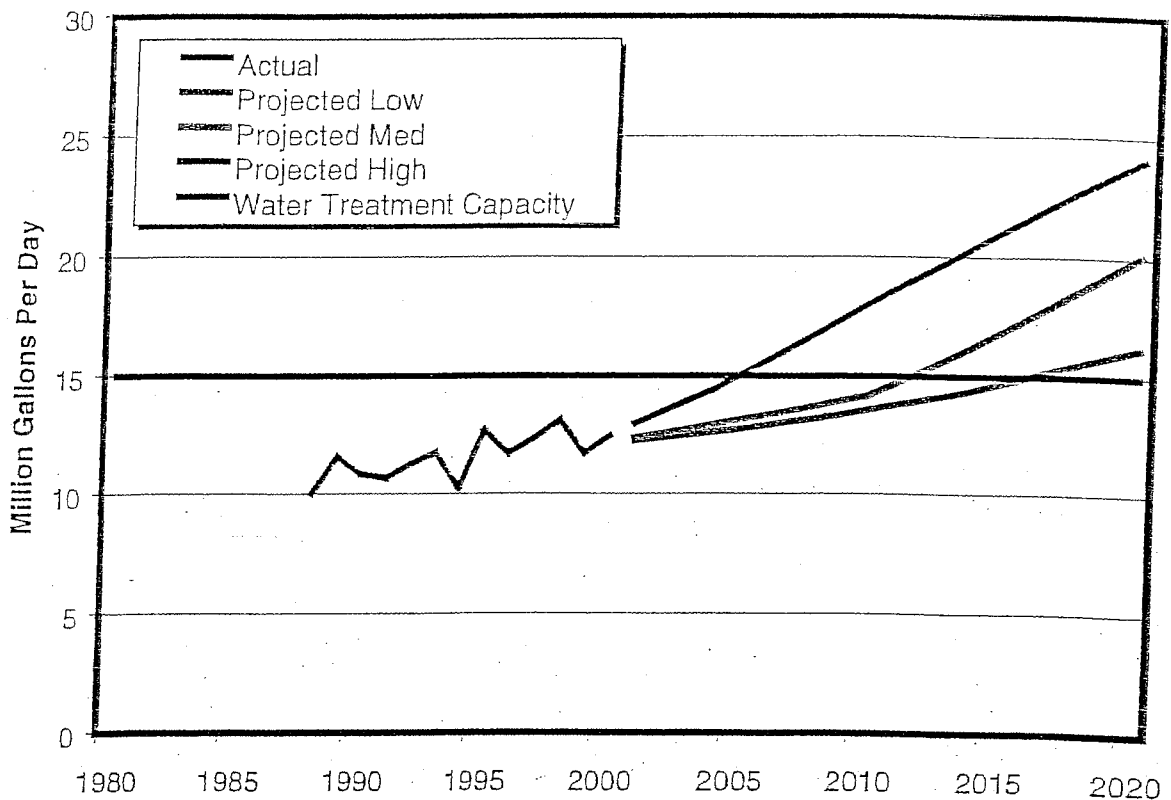
Based on these population projections and the per capita use of 357 gpd, Brawley's average day water demand in year 2020 is expected to increase from its current 7.5 MGD to 10.1 MGD under low-growth assumptions, and to 15.0 MGD under build-out or high-growth assumptions. Figure 2-3 shows the range of average day water demand projections. Its important to note that these demand projections do not account for any future water conservation efforts and assume that Brawley remains largely un-metered.

Figure 2-3
City of Brawley Average Day Water Demand Projections



In order to get maximum day water demands, a peaking factor of 1.6 was used (Brawley Master Plan for Water Distribution System, 1999). Figure 2-4 presents the peak day demands for Brawley as well as the water treatment plant design capacity. Based on these demand projections, the current water treatment plant's capacity would be exceeded as soon as 2005 under high-growth population projections or as late as 2016 under low-growth population projections.

Figure 2-4
City of Brawley Maximum Day Water Demand Projections



Future Wastewater Flows

Water conservation in Brawley also has the potential of reducing wastewater flows. Since 1988, Brawley's wastewater flows have averaged 51% of total water production (based on City water treatment and wastewater treatment plant flows). Assuming this trend continues out in the future, and assuming that there is a peak factor of 1.04 (based on monthly peak wastewater flows), then peak wastewater flows in year 2020 are projected to increase from the current 4.0 MGD to 5.4 MGD under low-growth, and to 8.0 MGD under high-growth. Assuming the current wastewater plant upgrade to 5.9 MGD capacity is online within the next year or so, then that design capacity would be exceeded as soon as 2009 under high-growth projections and as late as 2016 under low-growth projections. Again, these wastewater flow projections assume no conservation or metering for Brawley. Figure 2-5 presents the peak wastewater flows and assumed design capacity for the upgrade to the wastewater treatment plant.

Figure 2-5
City of Brawley Peak Wastewater Flow Projections

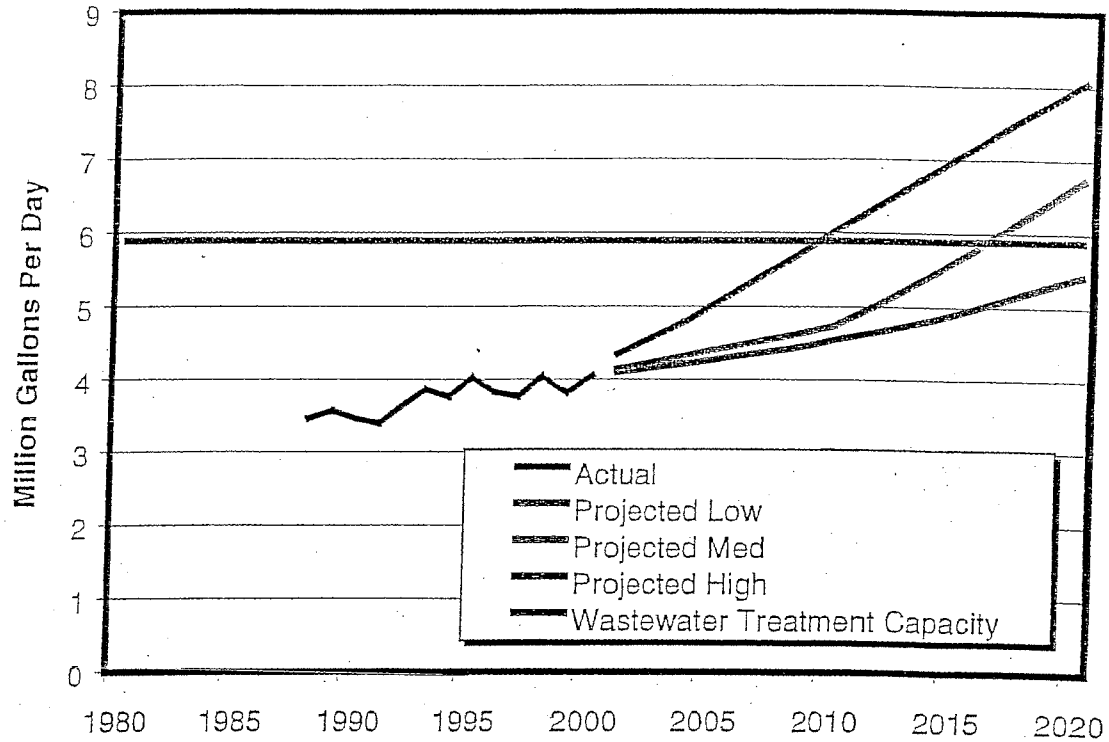


Table 2-1 summarizes the projections of population, water demand, and wastewater flows for the City of Brawley.

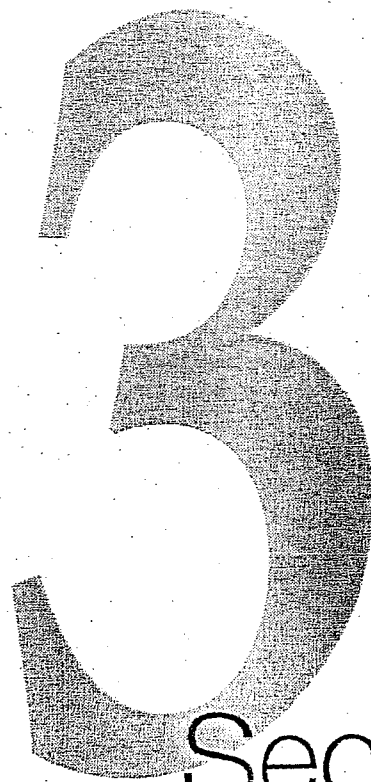
Table 2-1
City of Brawley Population, Water Demand, and Wastewater Flow Projections
(Under Mid-Growth Population Projections)

Year	Population	Average Water Demand (MGD)	Peak Day Water Demand ¹ (MWD)	Average Wastewater Flows ² (MWD)	Peak Wastewater Flows ³ (MGD)
2000	21,900	7.51	12.45	3.53	4.06
2005	23,000	8.21	13.14	4.19	4.40
2010	24,000	8.85	14.16	4.51	4.74
2015	29,500	10.54	16.87	5.38	5.64
2020	35,200	12.55	20.09	6.40	6.72

Notes: ¹ Based on peak day factor of 1.6

² Based on historical ratio of water treatment and wastewater treatment plant flows of 0.51

³ Based on historical monthly peaks of 1.04



Section
Three

Section 3

Water Conservation Goals

Introduction

Water conservation has been defined by many as the efficient use of water. It is not "doing without water," as some would contend. Indeed in the past, water conservation was more of an ethic—implemented only by those seeking to improve the environment. However, due to rising costs of new water supply and increased regulatory requirements for clean water and safe drinking water, conservation is becoming an economic necessity for more and more water utilities across the country.

In California, most urban water agencies participate in the Best Management Practices for Urban Water Conservation (BMPs). These BMPs represent the most feasible conservation measures, based on scientific and empirical studies and cost estimates. However, for each water agency, a specific BMP needs to undergo a cost-effectiveness test. If agencies can prove that the measures are not cost-effective for their area, then those measures can be excluded from their overall program. Most urban water agencies in California that are implementing BMPs face periodic water shortages that can significantly affect their economy and quality of life. In these cases, water conservation is often justified by the cost of alternative water supplies alone.

However, there are some smaller water providers that do not have water supply shortages. For these systems, deferring future capital projects is the only likely benefit of implementing water conservation.

EPA Conservation Guidelines

The Safe Drinking Water Act (SDWA, 42 U.S.C. 300j-15), as amended in 1996, requires the United States Environmental Protection Agency (EPA) to publish guidelines for use by water utilities in preparing a water conservation plan. At their discretion, states may require water systems to prepare a plan consistent with the guidelines as a condition of qualifying for a loan under the Drinking Water State Revolving Loan Fund (SRF), or other grants.

EPA has developed three levels of guidelines: (1) basic, for those utilities serving less than 10,000 people; (2) intermediate, for those utilities serving between 10,000 to 100,000 people; and (3) advanced, for those utilities serving over 100,000 people.

EPA has also identified three tiers of conservation measures:

Level 1 Measures

- Universal metering
- Water accounting and loss control
- Costing and pricing

- Information and education

Level 2 Measures

- Water-use audits
- Retrofits
- Pressure management
- Landscape efficiency

Level 3 Measures

- Replacements and promotions
- Reuse and recycling
- Water-use regulation
- Integrated resource management

Generally, Level 1 measures will be included in the Basic Plan; Level 2 measures in the Intermediate and Advanced Plans; and Level 3 measures in the Advanced Plan. The guidelines for all three plans include preparing a water demand forecast, screening water conservation measures for effectiveness and feasibility, and modifying the demand forecast accordingly based on a conservation program that is acceptable and implementable.

City of Brawley Water Conservation Goals

As part of its agreement to receive a grant from the NADB, the City of Brawley must adopt a water conservation program that, at a minimum, includes the installation of meters citywide. In addition, the conservation program should explore other conservation measures such as:

- Public awareness/education
- Pricing
- Plumbing retrofits for residential and commercial/industrial customers
- Ultra-low-flush toilet rebates
- Landscaping programs for residential and large landscaped areas
- Residential and commercial/industrial surveys
- System leak detection and repair

- High-efficiency clothes washing machine rebates

Although Brawley's water supply is currently not an issue in terms of availability or cost, conservation can be cost-effective and beneficial in other ways. A conservation program for Brawley can:

- Defer and/or downsize capital projects for water and wastewater
- Reduce operating costs for water treatment and pumping
- Improve the utilization and extend the life of existing facilities
- Improve reliability during droughts or system emergencies

Based on these potential benefits, the overall goal of the conservation program for the City of Brawley is:

To use water in an efficient manner that reduces the need for water and wastewater system expansion, while preserving the economics, social well-being, quality of life of its residents and water customers.

4

Section
Four

Section 4

Evaluation Of Water Meters

Introduction

A first step in any conservation program is metering. Almost all California cities are now metered. Metering for conservation includes installing water meters in existing customer sites where they do not currently exist, and requiring that new construction sites install water meters. Water meters are essential conservation tools because consumers tend to conserve water when they feel that they will be charged according to the amount of water they consume. Meters are also instrumental to other conservation measures because they provide information on the effectiveness of those conservation measures (CUWCC, 2000). Finally, meters are necessary for any commodity-based billing rate structure.

Brawley, as part of its agreement with NADB for the monetary grant to improve its wastewater and water infrastructure system, has agreed to install water meters for its water delivery system by December 31, 2003.

Potential Water Savings

There are two approaches to assess the potential water conservation from the implementation of water meters. The first approach is called Before and After. In this approach, water use is analyzed before meters are installed and after. If these studies are properly done, the Before and After approach can be used to estimate water conservation from the installation of water meters.

The second approach is a Comparative Approach. In this approach, similar cities with similar geographic and demographic attributes are compared to each other to draw conclusions about water use.

Before and After Studies

A study published in the American Water Works Association on the City of Davis, California concluded that the installation of water meters results in water savings. However, the amount of water savings is highly affected by the billing rate structure. In 1998, the City of Davis showed a decline of 14% in water use due to the public awareness of the upcoming implementation of metered rates during this year. In the next year, water use partially rebounded with a net decrease of approximately 4% of the pre-metered water use. The study concluded that the water savings would have been greater if the city had adopted a two-tier metered-rate structure rather than the relatively low-cost uniform rate structure it had adopted (AWWA, 2001).

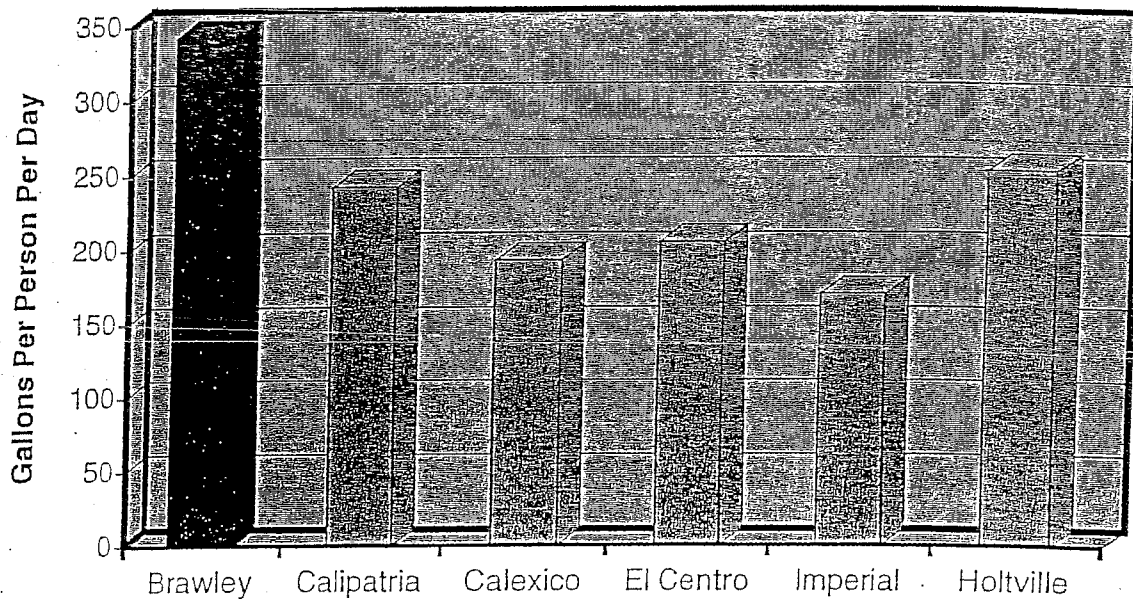
Several other well-documented studies were conducted in New York, Canada, and Africa measuring the conservation savings due to installation of water meters. In New York, Speedwell (1994) estimates a 36% decrease in water use due to metered billing. Bishop and Weber (1995) reports average annual water savings of 28% due to

metering and other conservation programs, with a summer peak seasonal reduction of 38%. Leblanc (1997) estimated a 20% reduction in single-family residential consumption due to metering and an appropriate billing system. Lovette (1992) reported a 25-40% water savings from the addition of universal metering. Koch and Oulton (1990) report that single family dwellings that have installed individual meters save on average 20-30%.

Comparative Use

A number of Brawley neighboring cities have already installed water meters. Meters were installed in neighboring cities between 7 and 30 years ago. Some cities started replacing old-technology meters with new-technology meters some 10 years ago. Appendix A compares information on population, water use, meters, and billing structures for 5 cities in the Imperial Valley. The cities include Calipatria, Calexico, El Centro, Imperial, and Holtville. Normalizing for population by calculating a per capita use for the most current data reveals that all of the neighboring cities consume far less water than Brawley. Figure 4-1 shows the per capita water use for these neighboring cities compared to Brawley.

Figure 4-1
Per Capita Water Use Comparisons



Per capita water use in Brawley is 25-50% greater than its neighboring cities. And although there may be other reasons for these differences in use, the fact that all of the neighboring cities are metered and Brawley is not does indicate that metering does make a difference. Other factors in use rates include the breakdown between customers (e.g., residential, industrial, commercial), the type of billing rate structure, and applied rates.

Based on the Before and After studies and Comparative Approach, it is safe to say that conservation from the implantation of meters for the City of Brawley would most likely be in the range of 15-30%. However, it is important to note that for meters to be successful in reducing water use, they must be tied to an appropriate rate structure and overall conservation program. Without these other components in place, Brawley's consumption after meters were implemented might creep up to pre-metered use (as what happened in Davis, California).

Water Meters, Technology And Cost

As one would expect, there are many different types of meters and metering technology to choose from. Technology ranges from very basic to high technology using sensors and radio frequencies. To determine the appropriate technology for meters, one must examine not only the costs of the meters themselves, but also the labor involved in reading the meters. In Brawley's case, this is most critical. Brawley does not have a metering program, nor the staff to read meters. Keeping labor costs down will be of utmost concern for Brawley.

Water Meter Technologies

Depending on the characteristics, water meters may be categorized in several ways. The following are some of the most significant characteristics for categorization of water meters and the associated categories:

1. Measurement Mechanism
 - a. Positive Displacement Meters
 - b. Multi-Jet Meters
2. Reading Method
 - a. Visual Read-out
 - b. Touch Read
 - c. Radio Frequency Drive-By Reading
 - i. One way
 - ii. Two way
 - d. Fixed base Transmission
 - i. Main Central Transmission Stations
 - ii. Several Repeaters for Receiving and Transmission of Signals
3. Dual Low/High Flow Measurement Option
 - a. Single Meters
 - b. Compound Meters

The main difference between the Positive Displacement (PD) and the Multi-Jet (MJ) meters is that the PD meters measure consumption by measuring the volume of water used, while the MJ meters measure consumption using water flows. A study that was done by the Southern California Water Company (SCWC, 2001) recommended that Multi-Jet meters be used which uses the velocity concept (water flows) in measuring water consumption. Multi-jet meters have longer life expectancy due to less wear and

more durability. They can also be used in normal water quality conditions and also where sandy problems occasionally occur. The study recommended that if a Positive Displacement technology is to be used, meters with the largest measuring chamber capacity should be used to reduce the wear and tear of moving parts, providing lower head loss and longer meter life.

The Visual Read-out type meter is the basic dial-type/odometer water meter. This type takes longer time to read and record readings. This type is still being used by the City of El Centro. The cities of Calexico, Imperial, and Holtville replaced the visual read-out meters with touch-read meters to save on labor costs. The Touch-Read type meters takes much less time to read and record the readings. This type is being used in the cities of Calipatria, Calexico, Imperial, and Holtville. Many cities in the Imperial Valley are now looking into using the Radio Frequency Drive-by Reading technology, where meters can be read from one location via radio transmission technology to a receiver in driving-by car. The Radio Frequency Drive-by Reading technology can read up to 200 reads per second. It can read meters ranging from 300 ft to 1000 ft away. Driving velocity could go up to 45 miles/hour without affecting the reading efficiency. These systems can read up to 25,000 meters per route. They could report any tampering with the meters and the number of tampers. On the Radio Frequency type, there are three radio frequency technologies that are available in the market. The one and a half way radio frequency technology is based on "waking up" the all meter-transmitters in the vicinity first and then receiving the information signals. The 2-way radio frequency technology is based on "waking up" one meter-transmitter at a time and receiving its information signal. The one-way frequency technology has more power and transmits signals continuously and is preferred due to its speed and efficiency in the receiving of information. On the other hand there is the fixed base technology, which is also a radio frequency technology, however, instead of the drive-by option fixed receivers and transmitters are added to the system. The first option for fixed base systems is based on having a few central stations for receiving and transmitting signals. These systems are still in their development phase and a detailed cost estimate on that would not be available before 6 months from the date of this study. Another fixed base system option is the Repeater system. The Repeater system is mainly used in apartment/condo building complexes where repeaters are located within the apartment complexes to receive and transmit meter readings from individual apartment meters to a the central office of the complex building. The costs of the repeaters are approximately \$2000 each.

Single type meters may measure low flows or high flows. If a high flow meter is used, it cannot capture any of the low flow meters, which will result in lost revenues due to the un-accounting of the low flows consumptions. Compound meters have the ability of measuring low flows as well as high flows. The compound meters are very good in cases of highly variable consumptions and can capture all types of flows generating more revenue due to accounting of almost every drop of water that is used.

Water Meter Brands and Costs

Some of the water meters brands/manufacturers in the market include Hersey, Master Meter, Sensus, Trident, and Rockwell. These manufacturers produce either one or several technology-type meters. Manufacturers of Hand-Held processors include Allegro, Logicon, and Psion. Manufacturers of Radio Frequency and Touch Read technologies include Ramar, which is compatible with a variety of meters including ABB Kent, Schlumberger, Master Meter, Badger, Sensus, Hersey, Precision and others.

An indicative measure of what the different technology-type meters may cost can be derived from the water meter prices shown in the table below:

Multi-Jet Meters	Visual Read	Touch Read	Radio-Read	Notes
5/8" x 3/4"	\$ 40	\$ 97	\$ 135	Common for Residential
3/4" x 7 1/2"	\$ 51	\$ 107	\$ 146	
3/4" x 9"	\$ 70	\$ 128	\$ 165	
1"	\$ 80	\$ 138	\$ 195	
1 1/2"	\$ 215	\$ 262	\$ 310	
2"	\$ 293	\$ 339	\$ 387	
Configuration Device with Cable			\$ 691	
Drive-By Turn key System includes Laptop			\$ 24,700	May be given free of charge by vendor
Hand Held Device			\$ 3,500-10,000	Optional
Estimated Billing System Costs*	\$25,000	\$25,000	\$25,000	

* includes software and computer hardware.

Installation Costs

It is difficult to precisely estimate the meter installation costs for Brawley. However, there are a number of published estimates that could be used for planning purposes. The Denver Water Department (1993) reports an average cost \$425 per meter, which includes purchase, installation, repair of lines if deteriorating, and public education. Bishop and Weber (1995) report costs between \$250 and \$750 per meter for purchase and installation. Cost of installation in new construction residence is cited as \$175 per meter. Leblanc (1997) reports per meter cost of \$210 for indoor, and \$450 for outdoor installation including purchase.

Meter Reading Labor Costs

An important issue for Brawley is the labor cost associated with reading the newly installed meters. Constrained by budgets, Brawley cannot afford to incur large O&M expenses to read meters. Based on the information from Appendix A, the following labor requirements for the Brawley's neighboring cities were derived:

4000
50
2,011

- The meter-reading rate for Visual-Readout meters (Holtville-10 miles pipeline/reader): 17 meters/hour
- The meter-reading rate for Visual-Readout meters (El Centro-33 miles pipeline/reader): 22 meters/hour
- The meter reading rate for Touch-Read meters (Holtville-10 miles pipeline/reader): 40 meters/hour
- The meter-reading rate for Touch-Read meters (Imperial-13 miles pipeline/reader): 25 meters/hour
- The meter-reading rate for Touch-Read meters (Calipatria- 19 miles pipeline/reader): 43 meters/hour
- The meter-reading rate for Touch-Read meters (Calexico- 40 miles pipeline/reader): 37 meters/hour

Based on these statistics, estimated labor requirements were derived for Brawley for the three different meter technologies:

- The estimated meter-reading rate for Visual-Readout meters (Brawley- 25 miles pipeline/reader): 20 meters/hour (30 staff days)
- The estimated meter-reading rate for Touch-Read meters (Brawley- 25 miles pipeline/reader): 35 meters/hour (17 staff days)
- The estimated meter-reading rate for Radio Frequency-Read meters (Brawley- 75 miles pipeline/reader): 600 meters/hour (one 8-hour staff day)

Cost Analysis of Water Meters for Brawley

To evaluate which water meter technology Brawley should implement, total costs for the meters, installation, labor and mileage were compared. Since most manufactures offer 15-year warranties on the equipment, it is fair to assume a 15-year life for the meters. There will likely be annual O&M costs associated with the upkeep of these meters, but it is assumed that those costs would be the same no matter which meter technology was selected.

The following basic assumptions were made to determine this total cost comparison:

- 4800 meters to be installed (3840 5/8" meters, 720 1" meters, and 240 2" meters)
- 3 meter-readers to read meters once a month for visual read option.
- 2 meter-readers to read meters once a month for touch read option
- 1 meter-reader to read meters once a month for Radio Frequency-Read option

- Each reader responsible for meters on 25 miles of main pipeline for visual read out option.
- 1 reader responsible for meters on 75 miles of main pipeline for radio read option.
- 4800 meters to be read once a month (as of 2001)
- The assumed meter-reading rate for Visual-Readout meters: 20 meters/hour
- The assumed meter-reading rate for Touch-Read meters: 35 meters/hour
- The assumed meter-reading rate for Radio-Read meters: 600 meters/hour
- City of Brawley Reader labor rate: \$14/hour
- 75 miles of main pipelines, driving once a month
- Driving costs: 34.5 cents per mile.
- Installation Costs: $200 \times 4800 = \$960,000$
- Purchase Costs of Visual Read:
 - 5/8" meters $\$40 \times 3840 = \$153,600$
 - 1" meters $\$80 \times 720 = \$57,600$
 - 2" meters $\$293 \times 240 = \$70,320$
 - total cost = \$281,520
- Purchase Costs of Touch Read:
 - 5/8" meters $\$97 \times 3840 = \$372,480$
 - 1" meters $\$138 \times 720 = \$99,360$
 - 2" meters $\$339 \times 240 = \$81,360$
 - total cost = \$553,200
- Purchase Costs of Frequency Read:
 - 5/8" meters $\$135 \times 3840 = \$518,400$
 - 1" meters $\$195 \times 720 = \$140,400$
 - 2" meters $\$387 \times 240 = \$92,880$
 - Configuration device = \$691
 - Hand held devices = \$3,500
 - total cost = \$751,680
- Annual Labor Costs for Frequency Read: $4800/600 \times \$14 \times 12 = \$1,344$
- Annual Labor Costs for Visual Read: $4800/20 \times \$14 \times 12 = \$40,320$
- Annual Labor Costs for Touch Read: $4800/35 \times \$14 \times 12 = \$23,040$
- Annual Mileage Costs for Visual Read and/or Touch Read: $75 \times \$0.345 \times 12 = \310
- Annual Mileage Costs for Radio Frequency Read: $40 \times \$0.345 \times 12 = \165

Table 4-1 summarizes the cost analysis for the three main types of water meter technologies. As seen by the figures, assuming a 15-year life, the Radio Frequency Read technology has the lowest overall costs, compared to the Touch Read or Visual Read meters. The reason for this is due to the labor requirements and mileage costs, which overtime outweighs the cost differential between the meters themselves.

Table 4-1
Comparison of Total Costs for Different Water Meter Technologies

Costs	Visual Read	Touch Read	Radio Frequency
Purchase	\$281,520	\$553,200	\$751,680
Installation	\$960,000	\$960,000	\$960,000
Labor to Read	\$604,800	\$345,600	\$20,160
Mileage	\$4,665	\$4,665	\$2,490
Billing System	\$25,000	\$25,000	\$25,000
Total for Years in Service	\$1,875,985	\$1,888,465	\$1,759,330

Note: Assumes a 15-year meter life. Labor and mileage costs reflect 15 years of monthly meter reading.

It should also be noted that when evaluating water meters, the following other considerations should be factored into the decision:

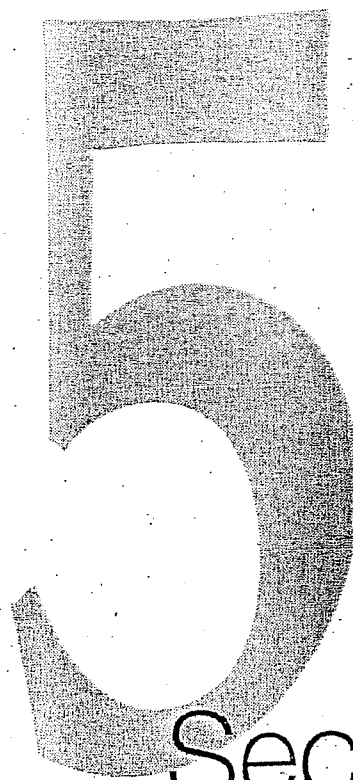
1. Maintenance costs & Warranties
2. Accuracy
 - a. Single meters versus Compound meters
3. Durability
 - a. Stainless Steel versus others
 - b. Heat-treated glass (scratch resistant) cover versus Plastic
 - c. Positive Displacement versus Multi-Jet Meters
4. Availability of local vendors for maintenance
5. Integrated Billing System Software
6. Adaptability for future Upgrade

Recommendations for Brawley

Specific vendor recommendations for meters cannot be made without a competitive bid process, where specs are given and vendors allowed to tailor their bids accordingly. However, based on the investigation of meter technology, costs, and other issues, the following recommendations can be used by Brawley for a vendor bid process:

1. Radio frequency meters have a better pay-off in the long-term, than visual or touch read meters.
2. Meters with 10 to 15 year warranties should be sought.
3. Meters that have relatively low maintenance should be sought.

4. Single meters are sufficient, given that the appropriate single meter is selected for single-family, multifamily, commercial, and industrial customers. Some compound meters might be installed on select large customers that are expected to have extreme variability in usage.
5. Multi-jet meters are recommended over positive displacement devices, due to their longer life expectancy.
6. Vendors that have a local presence should be preferred to keep maintenance costs down.
7. Although having meters that can be upgraded is beneficial, given the recommendation to go with radio frequency meters it is less important.



Section Five

Section 5

Evaluation Of Conservation Measures

Approach

In the past, water conservation was seen as a quick fix for mitigating temporary, usually drought-related, water supply shortages. Long-term Conservation beyond such emergency conditions often conjured up negative images of brown lawns and short showers.

The conservation measures of today have a different focus and are more commonly termed "water-use efficiency" programs. Today's water-use efficiency programs are designed to make long-term contributions to beneficially reducing per capita water without compromising the quality of life of the water customers.

In 1991, a consortium of California water agencies and environmentalists formed the California Urban Water Conservation Council (CUWCC). The centerpiece of the organization was a document known as the Memorandum of Understanding (MOU) outlining 16 (since distilled down to 14) Best Management Practices (BMPs) for water-use efficiency. Today, over 150 California water agencies have voluntarily signed the MOU agreeing to implement those BMPs that are determined to be locally cost-effective.

While cost-effectiveness is a critical determinant of program feasibility, several other factors that are specific to each individual community must also be taken into consideration. In Brawley's case, each conservation measure was prioritized based on:

- Cost effectiveness
- Compatibility with Metering Program
- Ease of implementation/local applicability
- Achievable by 12/31/2003

After each conservation measure is screened in terms of its cost-effectiveness, compatibility with metering, and ease of implementation, then an overall conservation program was developed. This overall program, with phased in measures, was then evaluated to determine its cost and benefits. To determine the benefits of the water conservation program for Brawley, the costs of avoiding or deferring capital projects for water and wastewater facilities were used.

Identification Of Conservation Measures

The following conservation measures were identified for the purpose of evaluation for the City of Brawley:

1. Public Awareness/Education
2. Residential Plumbing Retrofits (showerheads, faucet aerators, toilet displacement devices, outdoor hose timers, toilet leak detection tablets)
3. Residential Ultra-low-flush Toilet Rebates
4. Commercial/Industrial Plumbing Rebates (ULF toilets and urinals, auto-shut off faucets)
5. Commercial/Industrial Water Surveys
6. Residential Landscape Programs
7. Large Landscape Conservation (non-residential)
8. Distribution System Leak Detection/Repair
9. Residential Home Water Surveys
10. High Efficiency Clothes Washers Rebates

These measures were selected because they represent the most feasible measures, as identified by the CUWCC. In addition to these measures, pricing is also listed as a conservation BMP. However, at this time, pricing is not included in this evaluation because of its link to water meters. It is recommended that pricing and rate setting be examined in detail before Brawley implements its water meter program.

Although these measures have been identified by CUWCC as feasible, they should be screened for their cost-effectiveness and applicability for Brawley specifically. Generally, conservation programs that are around \$300/acre-foot (AF) or less are considered cost-effective because the cost of developing alternative water supplies is generally greater. In Brawley's case, the cost of alternative water supplies is much less than \$300/AF. However, given that water and wastewater treatment capacities for Brawley could be exceeded by as early as 2010—thus requiring new capital projects, it seems reasonable to assume that conservation measures that were \$300/AF or less would still be beneficial to Brawley. This assumption will be verified when the overall conservation program is evaluated in terms of its cost and benefits.

Note: The estimated water savings for each conservation measure in this report were largely derived from data in: *BMP Costs & Savings Study (CUWCC, July 2000)*.

Public Awareness Programs and Community Outreach Plan

Cost:	\$48,700 (public awareness) + \$5,000 (community outreach)
Implementation:	3 years (2 years prior to metering, 1 year after)
Optional Cost:	\$6,000 per year after third year
Water Savings:	No direct savings, enhances savings from other measures

The water conservation program calls for water meters to be installed by December 31, 2003. It is to be expected that there will be some community resistance to metering and conservation in general. A public awareness program and community outreach plan can help overcome this resistance. And when tied to with free incentives for water saving devices, a public awareness program can show how the residents of Brawley can reduce water usage without significantly impacting their quality of life. While water savings for the public awareness program have not been quantified, having a good public awareness/information campaign is considered by conservation experts as an essential component of any comprehensive water conservation program.

Given the timing for the implementation of the water meters, it is recommended that the public awareness program be started by the fall of 2001. The main components of the program should include:

- A two-year Marketing Campaign for the water metering and associated water conservation incentives, starting in the winter of 2001. The estimated cost is \$5,000 per year (\$10,000 in total).
- Create a conservation web page for Brawley's Internet site by the winter of 2001. The estimated cost is \$1,500.
- Maintain a 1-800 telephone line with information on conservation for at least three years. The estimated cost is \$200 per year (\$1,200 in total).
- Mail out 4,500 bill stuffers @ \$0.50, twice a year, for two years prior and one year after the installation of meters. Bill stuffers would inform residents about the meters and how to conserve water without significantly changing their lifestyles. The estimated cost is \$4,500 per year (\$13,500 in total).
- Purchase 15,000 brochures @ \$1.50 ea, suggested schedule: 5,000 brochures in year 1; 5,000 brochures in year 2; and 5,000 brochures in year 3. Brochures would detail how residents can save water easily. Brochures can be made available at all community/civic areas. Estimated cost is \$7,500 per year (\$22,500 in total).
- Beyond these elements, Brawley may wish to continue up-keep of this program by funding annual poster contests, school programs, and general marketing/administration. The cost for this annual up-keep (after year 3) is estimated to be \$6,000 per year.

In addition to the public awareness program, a community outreach program is well advised. Whereas public awareness is one-way communication, community outreach is all about listening to what your residents have to say. The estimated cost of the community outreach program is \$5,000.

Essential elements of a community outreach program include:

- Hold several town meetings prior to the metering program. Every effort should be made to document concerns, suggestions and general questions of the participants of the meetings.
- Place suggestion boxes in key areas around the City.
- Work with chamber of commerce to solicit input from non-residential water customers.

Sources of public education materials:

Organization and Internet Web Page	Materials Available
American Water Works Association www.awwa.org	Libraries of brochures, bill stuffers, videos, books on conservation practices
Water Education Foundation www.water-ed.org	Libraries of brochures, bill stuffers, videos, books on conservation practices
California Water Awareness Campaign www.wateraware.org	School educational materials on conservation
Association of California Water Agencies www.acwanet.com/news/membernews/schoolled.html	School educational materials on conservation
California Urban Water Conservation Council http://www.cuwcc.org/	General information on California's BMPs for urban water conservation and numerous guides and technical resources for conservation managers

Residential Water Saving Devices

Cost:	\$37,100
Implementation:	Start program when meters are installed
Water Savings:	28,960 gallons per day (assumes 80% install rate)
Unit Cost:	\$229/Acre-foot (assumes 5 year life)

This measure makes available low-flow showerheads, faucet aerators, toilet displacement devices, leak detection tablets, and outdoor hose timers free to residential water customers. Components of the measure include:

- Low-flow showerhead
cost = \$7.50 each (5 year life)
water savings = 5.5 gallons per day per device
- Toilet displacement device
cost = \$1.00 each (5 year life)
water savings = 4.0 gallons per day per device
- Faucet aerators
cost = \$1.00 each (5 year life)
water savings = 1.5 gallons per day per device
- Leak detection tablets
cost = \$0.05 each
water savings = 0.6 gallons per day per device (average)
- Outdoor hose timers
cost = \$10.00 each
water savings = 8.0 gallons per day per device

It is recommended that residential kits be made, consisting of: one showerhead; one toilet displace device; two faucet aerators; and two leak detection tablets. Given that Brawley is a small, tight-knit community it makes sense that these kits be distributed by having water customers pick them up at City Hall or some other central location. This would keep program costs down and help to ensure that devices are given to those that really want them (keeping installation of devices high). It is estimated that the demand for these kits would be 2,000 (approximately half of Brawley's residential customers). In addition, 1,500 outdoor hose timers should also be made available to those who use the hose or hose-based sprinkler to water their lawns.

It is also estimated that costs of about \$6,000 would be needed for materials (promotional bags, and education on installation), marketing, and administration.

Residential Ultra-Low-Flush Toilet Program

Cost:	\$120,000
Implementation:	Start program when meters are installed
Water Savings:	30,400 gallons per day
Unit Cost:	\$176/Acre-foot (assumes 20 year life)

Ultra-low-flush (ULF) toilets consume 1.6 gallons per flush compared to 3.5 gallon per flush toilets, which became standard in 1980, and 5.5 or higher gallon per flush models, which preceded them. ULF toilet programs have become the centerpiece for most urban water conservation programs in California. Water districts can offer rebates for all or a portion of the cost of the toilet, or toilets themselves can be distributed at central locations. The rebate programs are generally cheaper to administer, but can present barriers to lower-income residents as they have to purchase the toilet first, then get reimbursed later. Distribution programs are generally more popular in smaller communities, especially when tied to special events, but can be more costly.

For Brawley, it is recommended that ULF toilets be distributed at a central location. The cost of the ULF toilet is estimated to be \$75 per device. To keep administrative costs down, the City can partner with local community groups such as the Boy Scouts, Rotary Club, Churches, Schools, or other similar groups to help market the program and sponsor the event. In many cases, these community groups get \$10 to \$20 per toilet as a fundraiser, which also helps encourage their distribution.

It is estimated that Brawley could market 1,000 toilets in the first year. Toilets save between 22.5 to 62.0 gallons per day per device depending on if they are used in single-family or multifamily homes. Generally, more single-family customers respond to such programs. Assuming that 80% of the toilets go to single-family homes, the savings per toilet would average:

$$(22.5 \times 0.80) + (62 \times 0.20) = 30.4 \text{ gallons per day}$$

In addition to the cost of the toilets themselves, costs for materials, advertising, administration, and a consultant to manage the program would total an estimated \$45,000.

Commercial/Industrial Plumbing Retrofits

Cost:	\$36,750
Implementation:	Start program when meters are installed
Water Savings:	6,435 gallons per day
Unit Cost:	\$340/Acre-foot (assumes 15 year life)

As in the residential sector, there is potential for significant water savings from retrofitting older plumbing fixtures in the commercial/industrial sector with conserving devices. Many times, non-residential customers respond very positively to such programs because they save costs, which increase profits. For Brawley, it is recommended that rebates be offered to commercial/industrial water customers for:

- Ultra-low-flush toilets @ \$100 per device
- Low consumption urinals @ \$75 per device
- Low consumption faucets @ \$50 per device

It is estimated that the market for this program would be 200 toilets, 50 urinals, and 50 faucets. Given the small scale of this program, it makes sense for Brawley to outsource the administration of this program. The estimated cost for this outsourcing, including marketing and materials, is \$10,500.

The water savings from these plumbing devices is based on their expected use throughout the year. Assuming 300 working days, on average, the savings would be:

- Ultra-low-flush toilets: 30 gallons per day $\times (300/365) = 24.6$ gallons per day
- Low consumption urinals: 22 gallons per day $\times (360/365) = 18$ gallons per day
- Low consumption faucets: 15 gallons per day $\times (360/365) = 12.3$ gallons per day

Brawley may want to continue this program, if successful, for another one to two years.

Commercial/Industrial Water Use Surveys

Cost:	Difficult to estimate for Brawley
Implementation:	Needs to occur at least one year after meters, to get history
Water Savings:	Difficult to estimate for Brawley
Unit Cost:	\$300-\$500/AF (based on other Cities' programs)

These surveys can range from a simple walk-through of a building, reviewing basic plumbing fixtures and making recommendations, to a highly sophisticated review of the manufacturing practices that utilize water in some way. The purpose of the surveys is to identify and quantify water saving-opportunities for individual customers.

It is difficult to estimate the savings from this program due to the complexity and specific nature of the recommendations for saving water. This program is also quite advanced in nature, requiring that the City gain expertise in surveys or hire qualified consultants. Surveys of this kind also do not make much sense without metered water use history.

Large Landscape Conservation

Cost:	Difficult to estimate for Brawley
Implementation:	Needs to occur at least one year after meters, to get history
Water Savings:	Difficult to estimate for Brawley
Unit Cost:	\$300-\$500/AF (based on other Cities' programs)

These programs are often targeted to land parcels greater than 2 or 3 acres with significant landscaping. The program typically involves preparation of a water budget and a rebate for achieving some specified reduction in outdoor use. These programs work best when these large landscaped areas are metered separately from the indoor use meters.

Landscaping conservation programs, in general, work best with a metered system that has a tiered billing rate structure. These types of programs are relatively new, and therefore little data exists in costs or savings. CUWCC estimates the cost of the water budget alone to be \$50 to \$300 per site. Rebates may cost \$200 to \$1000 per site for a specified reduction in water use.

Residential Landscape Program

Cost:	\$115,000+
Implementation:	Needs to occur at least one year after meters, to get history
Water Savings:	50,000 to 100,000 gallons per day depending on rate structure
Unit Cost:	\$200/AF to \$700/AF depending on rate structure

These programs often rely on offering rebates to residential customers for automatic irrigation control devices. They can be installed on either existing automatic sprinkler

systems (very inexpensively) or existing manual sprinkler systems (a bit more expensive). However, if neither an automatic or manual irrigation system exists then one would have to be installed before this program would have any benefits. Installing a sprinkler system can range from several hundreds of dollars to thousands of dollars depending on the size lot. Typical rebate programs have offered \$200 to help pay for the irrigation control devices.

The range of savings from such programs is highly dependant on the billing rate structure. With a tiered rate structure, savings can be as much as 200 gallons per day. Without a tiered rate structure, savings can be half of that. It does not make sense to implement this program until well after meters are in place in order to get water use history.

Distribution System Leak Detection/Repair

Cost:	\$90,000
Implementation:	Needs to occur at least one year after meters
Water Savings:	up to 5% of total water production, depending on system age

System audits include quantifying all produced and sold water, and may also include testing meters to determine unaccounted for water. System losses could come from accounting procedure errors, illegal connections, meter errors, leakage, reservoir seepage, or others.

One of the most important byproducts of metering is the ability to more quickly and accurately locate water leaks in the distribution system.

Savings from leak detection and repair can range from 5 to 20% in California depending on the age and size of the system. The USEPA estimates O&M costs of \$3.27 per capita for the size of Brawley (*Drinking Water Infrastructure Needs*, 1997). This translates into a cost for Brawley of \$72,000 for detection/repair, plus \$18,000 for a comprehensive system audit. It is not recommended that Brawley pursue this measure until after the metering program is well in place.

The following are program resources on system leak detection/repair:

- American Water Works Association: *Water Audits and Leak Detection: AWWA Manual M36, 2nd Edition*
- California Department of Water Resources: *Water Audit and Leak Detection Guidebook (1986)*
- California Urban Water Conservation Council: CUWCC has two sets of leak detection equipment on loan to its member agencies. The equipment costs approximately \$10,000. CUWCC offers workshops about every 6 months to train participants on the use of the equipment and how to detect leaks.

High Efficiency Clothes Washers

Cost:	\$36,300
Implementation:	Could be implemented when meters are being installed
Water Savings:	12,115 gallons per day
Unit Cost:	\$535/AF (assuming a five year life)

High efficiency clothes washers (HEWs) use about one-third less water than traditional clothes washers. There are also substantial energy savings associated with this measure. HEWs have other benefits, such as they are more gentle on clothes, use less detergent, and accommodate bigger loads. However, HEWs are generally \$400 to \$1,000 more costly than traditional models.

On May 23, 2001, the U.S. Department of Energy announced new standards for residential clothes washers. This standard would require that clothes washers would be at least 20% more efficient by 2004. There are proposed tax incentives to encourage manufactures to meet this standard.

Savings attributed to HEWs have been estimated to be:

- 16.5 gallons per day for single-family homes
- 112.9 gallons per day for multifamily homes

Rebate programs seem to work best, with water districts offering up to \$200 per rebate to residential customers. However, participation in these types of programs has generally been low (under 10% even with sizable rebates). The reason, given the high expense of the machines, most consumers do not take advantage of the program unless they are replacing their old machine.

For Brawley, it is estimated that a market for 50 single-family homes and 100 multifamily homes would exist in the first year. Rebates of \$100 for single-family customers and \$200 for multifamily landlords would most likely generate interest. In addition to the rebates, about \$6,300 would be needed for materials, labor, marketing and consulting services.

Residential Home Water Surveys

Cost:	\$18,700
Implementation:	Could be implemented when meters are being installed
Water Savings:	6,440 gallons per day
Unit Cost:	\$520/AF (assuming a five year life)

Residential home water surveys (surveys) can be used for a wide-variety of purposes. They can be used to educate residents on how to become more water efficient, saving them water and energy costs. They can be used to gather large quantities of data used for baseline studies or benchmarking. And they can be used to distribute and help

install residential plumbing retrofit kits, ensuring the most effective installation rates of such devices.

Trained surveyors point out leaky toilets, faucets, showers, and educate residents on outdoor irrigation practices. Like public education programs, it is difficult to quantify all the savings attributed to surveys, because much of the savings comes from either behavioral modifications in use, or better installation rates of residential plumbing devices.

Usually, only 10 to 15% of the highest-water use customers participate in these programs. This would likely translate to about 200 surveys for Brawley. The savings from this program are estimated to be: 6,400 gallons per day (based on installation of showerheads and faucet aerators).

The cost per survey is estimated to be about \$50. In addition, a cost for residential devices, education materials, administration, data loggers, and marketing is estimated to be \$8,750. This program would ideally be implemented during the metering program.

Screening Of Conservation Measures

Based on the information provided above on each conservation measure, the following criteria were used to help rank the measures:

1. Does the measure support the metering program?
2. Is the measure cost-effective (generally at or below \$300/AF)?
3. Is the measure relatively easy to implement?
4. Can the measure be implemented by December 31, 2003?

Table 5-1 presents the screening of the ten water conservation measures found to be most feasible for implementation by Brawley. For each criteria, a yes, no, or maybe response was generated to help determine which measures should be included in an overall water conservation program.

Table 5-2
Screening of Water Conservation Measures

Conservation Measure	Does Measure Support Metering?	Is Measure Cost-Effective?	Is Measure Easy to Implement?	Can Measure be Implemented by 12/31/03?
Public Awareness	YES	YES	YES	YES
Residential Water Saving Devices	YES	YES	YES	YES
Residential ULF Toilet	YES	YES	MAYBE	YES
CII Plumbing Retrofits	YES	MAYBE	YES	YES
CII Water Use Surveys	YES	MAYBE	NO	NO
Large Landscape Programs	YES	MAYBE	MAYBE	NO
Residential Landscape Programs	YES	MAYBE	MAYBE	NO
System Leak Detection/Repair	YES	MAYBE	MAYBE	NO
High Efficiency Clothes Washers	YES	NO	YES	NO
Residential Water Use Surveys	YES	NO	NO	NO

Recommendation

Based on the screening of conservation measures, it is recommended that Brawley implement its water conservation in two phases. The first phase is needed to support the required installation of water meters by December 31, 2003. The measures included in Phase 1 are estimated to be the most cost-effective options for Brawley and are relatively the most easy to implement. It is believed that these measures would also help alleviate concerns of the residents regarding metering impacts.

Phase 2 of the water conservation program could be implemented at least one to two years after the metering program if the need still exists. Projected savings from the metering program, and corresponding billing rate structure, together with Phase 1 measures may result in the desired overall reduction in per capita water use. The measures included in Phase 2 are a bit more expensive, are generally more difficult to implement, and require that meters be in place for at least a year in order to get usage history.

Finally, two conservation measures were identified as being too costly. It is not recommended that Brawley pursue these measures for implementation.

The following summarizes Phase 1 and Phase 2 of the recommended conservation program for Brawley.

Phase 1:

- Installation of water meters (to be in place no later than December 31, 2003). It is recommended that Brawley implement residential meters first, followed by commercial, industrial, and municipal.
- Development of a minimum three-year public awareness/community outreach program (starting by winter of 2001). It is essential that the community outreach program start very soon.
- Distribution of 2,000 free residential water saving devices (starting when meters are installed). Several vendors for these kits include:

Niagra Conservation
www.NiagaraConservation.com

ETL
www.savewater.com

Phase 2:

- Depending on the performance of Phase 1 conservation, distribution of 1,000 free ULF toilets to residential customers might be a cost-effective way to reduce water.
- Depending on the performance of Phase 1 conservation, making available 200 rebates for ULF toilets, 50 rebates for low consumption urinals, and 50 rebates for low consumption faucets for commercial/industrial customers might be a cost-effective way to reduce water.
- Landscaping programs for residential and large landscaped areas, commercial/industrial water use surveys, and system leak detection/repair should be re-evaluated after several years of metering to determine their cost-effectiveness for Brawley.

Benefits Of Conservation Program

To determine the cost-benefit of the recommended conservation program for Brawley, the avoided costs of constructing additional water and wastewater treatment capacity were used.

In order to determine how much or how long these future investments in capacity could be avoided, the water demand and wastewater flow projections need to be modified by the expected savings due to conservation.

*Revised schedule for
new des
July 11 - COB submit water C. Program
Account provided for
- 10 credits W.C. Program*

Expected Water Conservation Savings

For planning purposes, the conservation from installation of metering is expected to reduce peak daily water demands by at least 20%. It is estimated that peak wastewater flows would be reduced by 10% (based on historical relationship between water production and wastewater flows).

Conservation from the residential water savings devices is expected to reduce average daily usage by 30,000 gallons, of which 12,000 gallons per day savings will be outdoors. Assuming that outdoor water use is the main driver for peak day usage, then the estimated peak daily use reduction can be derived using the following formula:

Peak daily use reduction =
total average daily use reduction + [outdoor daily use reduction x 0.6 peak factor]

Therefore, the estimated peak daily use reduction would be:
 $30,000 + [12,000 \times 0.6] = 30,720$ gallons

Figure 5-1 shows the overall effect of the conservation program on reducing peak day water demands under the mid-growth population projections. Without conservation, it is expected that Brawley will exceed its treatment plant capacity in year 2012. With conservation, the treatment plant capacity would be exceeded in year 2017.

If Phase 1 conservation is successful, Brawley's per capita use could decrease from the current 357 gallons per day to 280 gallons per day.

Figure 5-2 shows the expected reduction in wastewater flows from the conservation program, under mid-growth population projections. Without conservation, it is expected that Brawley will exceed its wastewater treatment plant capacity in year 2016. With conservation, including metering and the other measures in Phase 1 of the conservation program, the treatment plant capacity would be exceeded in year 2019.

Figure 5-1
City of Brawley Peak Water Demand and Capacity

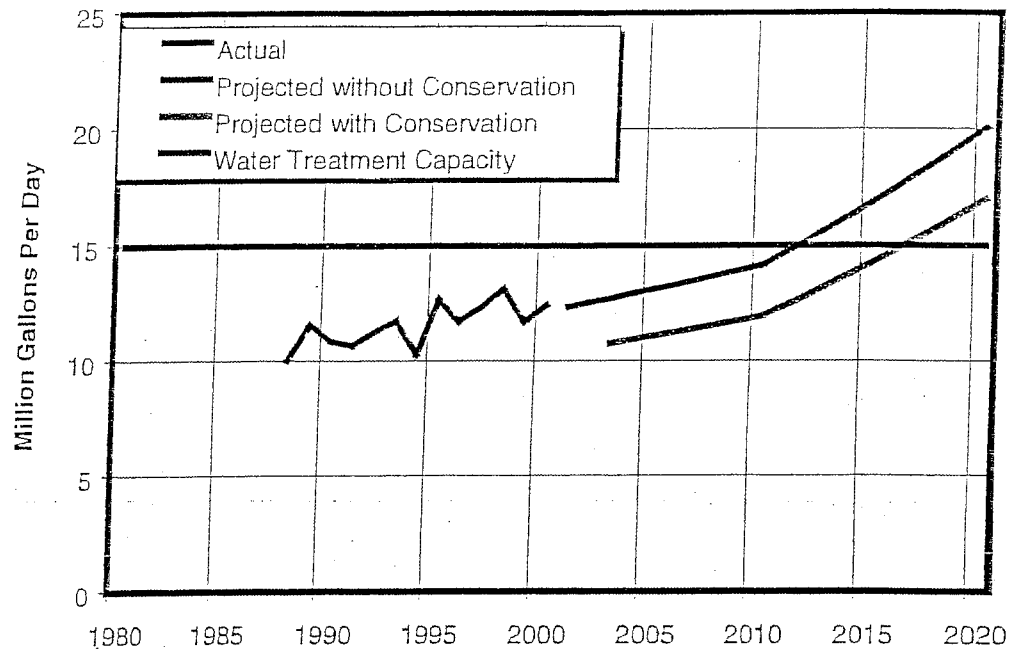
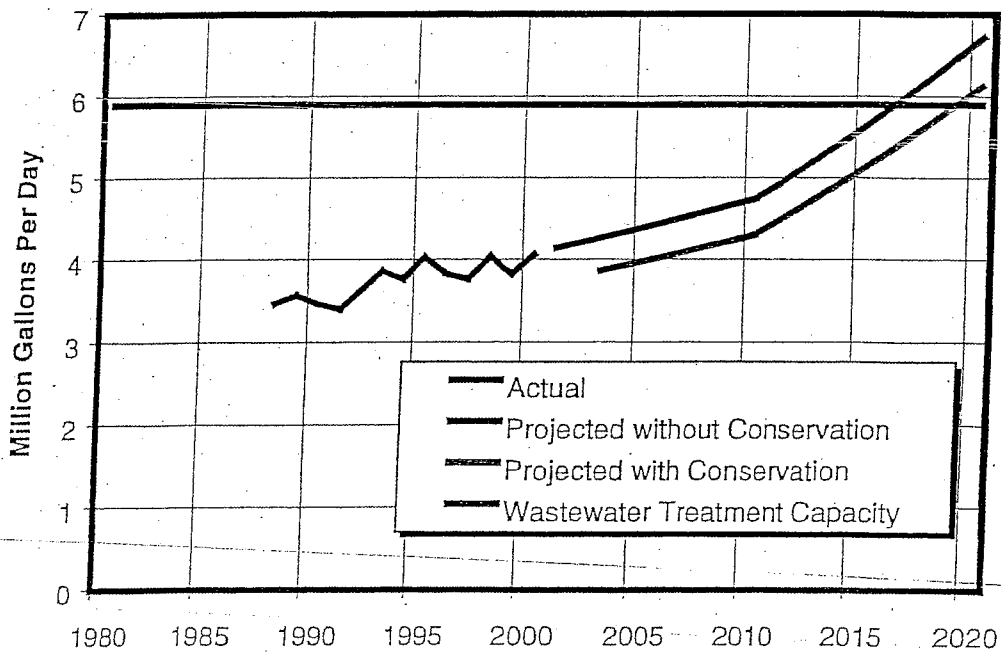


Figure 5-2
City of Brawley Peak Wastewater Flows and Capacity



Expected Cost-Benefits

The 20-year cost of the recommended Phase 1 conservation program for Brawley is estimated to be:

- \$1,736,680 for purchase and installation of radio frequency water meters
- \$30,200 for labor and mileage costs to read meters for 20 years
- \$200,000 of maintenance costs for up-keep of meters for 20 years
- \$90,800 for other conservation measures included in Phase 1

Therefore, the total 20-year cost of the conservation program is \$2.06 million.

To determine the benefits of the conservation program, the deferred costs of both water and wastewater treatment capacity expansion was used. Table 5-1 shows the savings due to deferring the water treatment capacity upgrade of \$17.2 million (Brawley Water Master Plan) and the wastewater treatment capacity upgrade of \$7.5 million (Brawley Water Master Plan).

Table 5-1
Cost Savings from Deferring Capital Projects in Brawley

Years Deferred	Water Treatment Capacity Upgrade (\$17.2 million)	Wastewater Treatment Capacity Upgrade (\$7.5 million)
1	\$419,000	\$182,000
2	\$828,000	\$361,000
3	\$1,228,000	\$535,000
4	\$1,617,000	\$705,000
5	\$1,997,000	\$871,000

* Assumes a discount rate of 5% and an escalation rate of 2.5%, for a net discount rate of 2.5%

Given the demand projections with and without conservation, the water treatment capacity upgrade could be deferred by 5 years and the wastewater treatment capacity upgrade by 3 years. This would provide total savings of \$2.53 million.

The net benefits of the conservation program would therefore be:

Deferred Capital Savings — Cost of Conservation Program = Net Benefits

or

\$2.53 million — \$2.06 million = \$0.47 million

6

Section
Six

Section 6

Implementation

Recommended Implementation Plan And Budget

The recommended implementation schedule for the water conservation program was developed in response to the requirements of the NADB funding, which state that conservation measures be in place by December 31, 2003. The schedule and corresponding budget reflects the need to start the public awareness campaign as early as possible in order to help minimize customer resistance to water metering and water efficiency programs.

It is anticipated that Brawley would start the grant process for funding for meters in fall of 2001. The procurement process for the water meters would occur in late 2001 or early 2002. Installation of meters would likely start in late summer of 2002 and continue through 2003.

The following summarizes the recommended implementation plan and budget.

Milestone	2001	2002	2003	2004
Public awareness campaign				
Bill stuffers				
Install Water Meters*				
Distribute residential water saving devices				
Meter budget		\$855,840	\$880,840	
Other conservation measures budget	\$5,000	\$18,700	\$35,825	\$30,825
Total Phase 1 conservation program budget	\$5,000	\$874,540	\$916,665	\$30,825

* Residential meters should be installed first, followed by commercial, industrial, and municipal.

Program Support Opportunities

There are a number of support opportunities that Brawley should explore to help reduce its costs and manage its water conservation program. These opportunities include co-funding possibilities, enacting City ordinances on water use efficiency, and joining the Urban Water Conservation Council.

Co-Funding Possibilities

There are several funding opportunities that Brawley should pursue to help reduce the costs of implementation. There are grants available for the purchase and installation of water meters. In fact, Brawley is planning to request a grant from the NADB to fund the implementation of water meters.

In addition, the Bureau of Reclamation co-funds water conservation programs in the west. This year, the Bureau has \$40,000 for co-funding conservation. The contact for this funding is:

Mr. Mark Niblack
U.S. Bureau of Reclamation, Yuma Area
(520) 343-8252

Possible Ordinances

Brawley may wish to enact City ordinances that encourage or mandate certain water efficiency measures. The benefits of ordinances are that it reduces the need for the City to entirely fund or manage water conservation. Many cities in California have a ULF toilet retrofit upon resale of a home. These ordinances require that before a legal real estate transaction can conclude, all non-conserving toilets be replaced with ULF toilets. Other ordinances require large landscape water use efficiency. Both the California Urban Water Conservation Council and Department of Water Resources can provide assistance in developing such ordinances. Appendix B contains information on California's current plumbing code law and a contact for the City of San Diego, which has an ordinance requiring retrofit of ULF toilets upon resale of a home.

Joining California Urban Water Conservation Council

The CUWCC was designed to provide technical assistance to California water agencies implementing conservation programs. The CUWCC has grown lately to include a technical staff that is familiar with the conservation programs implemented by most of the 150 subscribing water agencies. The CUWCC has sponsored a rich assortment of technical guidebooks and water savings studies that are available at no cost to members, or a minimal cost to non-members. Several technical workshops and informational sessions are sponsored each year.

Membership to the CUWCC costs approximately \$2,000 annually for a community the size of Brawley.

Impacts On Administration/Operations

Although it is difficult to accurately estimate, it is a certainty that the implementation of this water conservation program will impact the City of Brawley's administrative and operations functions. Implementation of meters alone will require a whole new billing rate structure. Specific areas of likely impact are:

Phase 1 (2001 – 2003):

- Selection and procurement of meters
- Supervision of meter installation process
- Selection and procurement/development of billing system
- Development of billing rate structure (rate study needed)
- Development of public awareness materials
- Increased customer communications/community outreach
- Development of conservation programs tracking system
- Implementation of Phase 1 conservation measures

Phase 2 (2004 and beyond):

- Meter reading
- Meter maintenance
- Accounting
- High water bill complaints from customers and resolutions
- Evaluation of Phase 2 conservation programs (if necessary)

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Appendices

Appendix A
Comparisons of Water System Information
for Select Cities in Imperial County

Comparisons of Water System Information for Select Cities in Imperial County

System Data	Calipatria	Calexico	El Centro	Imperial	Holtville	Brawley
Population	7,543	27,018	38,284	8,086	5,551	21,877
Pipeline Length	19 miles	85 miles	100 Miles	26 Miles	20 Miles	75 miles
Meters/Accounts	Total: 450 Meters 67%- Metered 33% will be metered in 2 years	Total: 5400 Met./Acc. 15% Indust & comm. 85% Residential	C: 709, F: 74, G: 88 I: 16, L: 37, LM: 1 M: 246, P: 2, R: 6613, RT: 43, SC: 42, G/O: 7, R/O: 1, RT/O: 1, SC/O: 2 Total: 7882 Meters/Acc.	Total: 2400 Meters	Total: 1400 Meters	18 metered Resid. 76 metered Com. 4370 unmet. Res. 317 unmet. Com. Total: 4781 Accounts
How Meters were Installed/Replaced	Installed in 1993	Replaced in 1995	Installed 1970	Replaced in July 1988	Installed in 1983 Replaced in 1992	1999 for Residential
Type of Meter	Precision Type/Master Meter Hand Held Processor	Rockwell SR2 Touch Read which replaced Hersey	Rockwell Dial meters	Sensus Touch Read replaced Hersey	Sensus Touch Read Technology 3/4-1" for Residential replaced older models	Sensus Trident Hersey Master
Estimated Water Loss based on Total Leakage compared to Brawley	29%	44%	40%	50%	26%	0%
Time to Read Meters	1 person / 1.5 days to Read/ Download / Re-read	2 persons / 5-6 Days to Read, 10 Days to Read/Download/Re- Read	3 persons/ 13 days	2 persons/6 Days	1 person/3-4 Days from 2 persons/5 days for old meters	
Estimated Current Water Production Million Gallons Per Year	666 MGY	1,900 MGY	2,864 MGY	499 MGY	513 MGY	2,740 MGY
Per Capita Water Demand (Gallons Per Day)	242 GPD	193 GPD	205 GPD	169 GPD	253 GPD	343 GPD

Comparisons of Water System Information for Select Cities in Imperial County (continued)

System Data	Calipatria	Calexico	El Centro	Imperial	Holtville	Brawley
g Rate System	Flat Rate for Older Homes 33% Will Be Metered in 2 Years	Residential \$27.19 / 1 st 3000 ft ³ /month \$1.37/100 ft ³ Commercial/Industrial \$30.29/1 st 1000 ft ³ \$1.87/100 ft ³	\$1.87 flat rate/month + \$1.2 / 1000 gallons/month	Residential Inside city limits \$10.79 Flat rate/Month + \$1.31/100 Cubic Feet Government \$21.57 Flat Rate/ Month + \$1.31/100 Cubic feet Outside city limits \$21.57 flat rate/month + \$1.31/100 cubic feet	Tabs Multi Plus Billing System Inside City Limit Residential 1 st 15000 Gallons/Month @ \$22.44 + \$2.224 for each additional 1000 Gallons/Month Outside \$44.99 for 1 st 15,000 Gallons/ Month + \$4.499 for each additional 1000 gallons/month	Single Family >50": \$39.25 50"-100": \$44.04 100"-150": \$48.83 150"-200": \$53.62 200"-250": \$58.41 Multi Family: \$29.39 Commercial/Industrial Group A: \$39.25 Group B: \$78.50 Group C: \$117.75 Group D: \$157.00 Group E (metered): \$39.25 (1 st 25,000 gal) + \$1.57/100gal over Group F: \$44.15/acre Group G (public): \$39.25
thly Base Water ge Rate for Single amily Dwelling of Brawley Certificate of Participation)	\$45.80	\$21.40	\$15.07	\$23.50	\$24.68	\$39.25
Contact Person	Jackie Loper (760) 348-2631 Edward Khong (760) 247-3391	Victor Rodriguez (760) 768-2162	Paul Stewart (760) 337-4575 Pete Gonzales (760) 337-4560 Mary McWhirter (760)337-4512	Carlos Floras (760) 355 2155 Sandy (760) 355 4371	Alberta (760) 356-2912 Jerry Peter (760) 356-2632	Yazmin Torres (760) 344-5800 Ext. 14

Legend: C: Commercial F: Fire Service I: Industrial P: Public Authority R: Residential M: Multiple Units G/O: G type outside City R/O: Residential Outside
RT/O: RT Outside City SC/O: SC Type Outside

Appendix B
California and Community Codes and
Ordinances Requiring Conserving Plumbing
Fixtures

CALIFORNIA CODES
HEALTH AND SAFETY CODE
SECTION 17920-17927

17921.3. (a) All new buildings constructed in this state shall use water closets and associated flushometer valves, if any, which use no more than an average of 1.6 gallons per flush and which meet performance standards established by American Society of Mechanical Engineers standards A112.19.2-1990 and A112.19.6-1990, and urinals and associated flushometer valves, if any, which use no more than an average of one gallon per flush and which meet performance standards established by American Society of Mechanical Engineers standards A112.19.2-1990 and A112.19.6-1990.

(b) Any city, county, or city and county may enact an ordinance to allow the sale and installation of non-low-consumption water closets or urinals upon its determination that the unique configuration of building drainage systems or portions of a public sewer system within the jurisdiction, or both, requires a greater quantity of water to flush the system in a manner consistent with public health. At the request of a public agency providing sewer services within the jurisdiction, the city, county, or city and county shall hold a public hearing on the need for an ordinance as provided in this subdivision. Prior to this hearing or to the enactment of the ordinance, those agencies responsible for the provision of water and sewer services within the jurisdiction, if other than the agency considering adoption of the ordinance, shall be given at least 30 days' notice of the meeting at which the ordinance may be considered or adopted.

(c) On and after January 1, 1994, all water closets sold or installed in this state shall be water closets and associated flushometer valves, if any, which use no more than an average of 1.6 gallons per flush and which meet performance standards established by American Society of Mechanical Engineers standards A112.19.2-1990 and A112.19.6-1990, and urinals and associated flushometer valves, if any, which use no more than an average of one gallon per flush and which meet performance standards established by American Society of Mechanical Engineers standards A112.19.2-1990 and A112.19.6-1990. Blowout water closets and associated flushometer valves are exempt from the flush volume requirements of this section.

(d) Notwithstanding subdivision (c), on and after January 1, 1994, water closets and urinals which do not meet the

standards referenced in subdivision (c) may be sold or installed for use only under either of the following circumstances: (1) Installation of the water closet or urinal to comply with the standards referenced in subdivision (c) would require modifications to plumbing system components located beneath a finished wall or surface. (2) The non-low-consumption water closets, urinals, and flushometer valves, if any, would be installed in a home or building which has been identified by a local, state, or federal government entity as a historical site, and historically accurate water closets and urinals that comply with the flush volumes specified in subdivision (c) are not available.

(e) (1) On and after January 1, 1994, all water closets and urinals sold for installation, or installed, shall be labeled, on both fixture and container, in accordance with their consumption classification and the average water consumption, measured in gallons, for that classification. The fixture label shall be intended for removal by the purchaser only, and shall so state on the label. (2) The wording on the label shall include, but not necessarily be limited to, the following: "This fixture qualifies according to ASME test procedures as a low-consumption water closet/urinal with an average consumption flush of 1.6 gallons or less/1.0 gallon or less."

(f) (1) This section shall not be construed to preempt any actions of cities, counties, cities and counties, or districts which prescribe additional or more restrictive conservation requirements affecting the sale, installation, or use of low-consumption water closets, urinals, and flushometer valves that meet the standards referenced in subdivision (c), or affecting the continued use of non-low-consumption water closets, urinals, and flushometer valves installed prior to January 1, 1994, that shall result in greater savings of water than would result under this section. (2) This section shall not be construed as granting any new or additional powers to cities, counties, cities and counties, or districts to promulgate or establish laws, ordinances, regulations, or rules governing the sale, installation, or use of low-consumption water closets, urinals, and flushometer valves.

(g) As used in this section, "non-low-consumption flushometer valve," "non-low-consumption urinal," and "non-low-consumption water closet" shall refer to devices, which do not meet the standards referenced in subdivision (c).

City of San Diego Ordinance Requiring Conserving Toilets Upon
Resale of Property

The City of San Diego has an ordinance requiring ultra-low-flush
toilets in all property upon resale. The contact for this ordinance
is:

Chris Robbins
Water Conservation Department
(619) 533-4203

APPENDIX H

City of Brawley Water Cross- Connection Control Program

CHAPTER 26A.

WATER CROSS-CONNECTION CONTROL PROGRAM.

- Sec. 26A.1. Purpose.
- 26A.2. Definitions.
- 26A.3. Cross-connection protection requirements.
- 26A.4. Backflow prevention devices.
- 26A.5. User supervisor.
- 26A.6. Administrative procedures.
- 26A.7. Water service termination.

Sec. 26A.1. Purpose. The purpose of this chapter is (1) to protect the public water supply against actual or potential cross-connection by isolating within the premises contamination that may occur because of some undiscovered or unauthorized cross-connection on the premises; (2) to eliminate existing connections between drinking water systems and other sources of water that are not approved as safe and potable for human consumption; (3) to eliminate cross-connections between drinking water systems and sources of contamination; and (4) to prevent the making of cross-connections in the future.

These regulations are adopted pursuant to the State of California Administrative Code, Title 17, Public Health entitled "Regulations Relating to Cross-Connections."

It is unlawful for any person, firm, or corporation at any time to make or maintain or cause to be made or maintained, temporarily or permanently, for any period of time whatsoever, any cross-connection between plumbing pipes or water fixtures being served with water by the city water department and any other source of water supply or to maintain any sanitary fixture or other appurtenances or fixtures which by reason of their construction may cause or allow backflow of water or other substances into the water supply system of the city and/or the service of water pipes or fixtures of any consumer of the city. (Ord. No. 88-10, §1(part).)

Sec. 26A.2. Definitions. (a) Air-gap Separation. The term "air-gap separation" means a physical break between a supply pipe and a receiving vessel. The air-gap shall be at least double the diameter of the supply pipe measured vertically above the top rim of the vessel, in no case less than one inch.

(b) Approved Backflow Prevention Device. The term "approved backflow prevention device" shall mean devices which have passed laboratory and field evaluation tests performed

by a recognized testing organization which has demonstrated their competency to perform such tests to the California Department of Health Services.

(c) Approved Water Supply. The term "approved water supply" means any water supply whose potability is regulated by a state or local health agency.

(d) Auxiliary Supply. The term "auxiliary supply" means any water supply on or available to the premises other than the approved water supply.

(e) AWWA Standard. The term "AWWA Standard" means an official standard developed and approved by the American Water Works Association ("AWWA").

(f) Backflow. The term "backflow" shall mean a flow condition, caused by a differential in pressure, that causes the flow of water or other liquids, gases, mixtures or substances into the distributing pipes of a potable supply of water from any source or sources other than an approved water supply source. Backsiphonage is one cause of backflow. Back pressure is the other cause of backflow.

(g) Contamination. The term "contamination" means a degradation of the quality of the potable water by any foreign substance which creates a hazard to the public health or which may impair the usefulness or quality of the water.

(h) Cross-connection. The term "cross-connection" as used in this chapter means any unprotected actual or potential connection between a potable water system used to supply water for drinking purposes and any source or system containing unapproved water or a substance that is not or cannot be approved as safe, wholesome, and potable. Bypass arrangements, jumper connections, removable sections, swivel or changeover devices, or other devices through which backflow could occur, shall be considered to be cross-connections.

(i) Double Check Valve Assembly. The term "double check valve assembly" means an assembly of at least two independently acting check valves including tightly closing shut-off valves on each side of the check valve assembly and test cocks available for testing the watertightness of each check valve.

(j) Health Agency. The term "health agency" means the California Department of Health Services, or the local health agency with respect to a small water system.

(k) Local Health Agency. The term "local health agency" means the county health authority.

(l) Person. The term "person" means an individual, corporation, company, association, partnership, municipality, public utility, or other public body or institution.

(m) Premises. The term "premises" means any and all areas on a customer's property which are served or have the potential to be served by the public water system.

(n) Public Water System. The term "public water system" means a system for the provision of piped water to the public for human consumption which has five or more service connections or regularly serves an average of twenty-five individuals daily at least sixty days out of the year.

(o) Reclaimed Water. The term "reclaimed water" means a wastewater which as a result of treatment is suitable for uses other than potable use.

(p) Reduced Pressure Principle Backflow Prevention Device. The term "reduced pressure principle backflow prevention device" means a device incorporating two or more check valves and an automatically operating differential relief valve located between the two checks, a tightly closing shut-off valve on each side of the check valve assembly, and equipped with necessary test cocks for testing.

(q) Service Connection. The term "service connection" refers to the point of connection of a user's piping to the water supplier's facilities.

(r) Water Supplier. The term "water supplier" means the person who owns or operates the approved water supply system.

(s) Water User. The term "water user" means any person obtaining water from an approved water supply system. (Ord. No. 88-10, §1(part).)

Sec. 26A.3. Cross-connection protection requirements. (a)
General Provisions.

1. Unprotected cross-connections with the public water supply are prohibited.

2. Whenever backflow protection has been found necessary, the city will require the water user to install an approved backflow prevention device by and at his/her expense for continued services or before a new service will be granted.

3. Wherever backflow protection has been found necessary on a water supply line entering a water user's premises, then any and all water supply lines from the city's mains entering such premises, buildings, or structures shall be protected by an approved backflow prevention device. The type of device to be installed will be in accordance with the requirements of this chapter.

(b) Where Protection is Required.

1. Each service connection from the city's water system for supplying water to premises having an auxiliary water supply shall be protected against backflow of water from the premise into the public water system unless the auxiliary water supply is accepted as an additional source by the city and is approved by the public health agency having jurisdiction.

2. Each service connection from the city water system for supplying water to premises on which any substance is handled in such fashion as may allow its entry into the water system shall be protected against backflow of the water from the premises into the public system. This shall include the handling of process waters and water originating from the city's water system which have been subjected to deterioration in sanitary quality.

3. Backflow prevention devices shall be installed on the service connection to any premises having (a) internal cross-connections that cannot be permanently corrected and controlled to the satisfaction of the state or local health department and the city, or (b) intricate plumbing and piping arrangements or where entry to all portions of the premises is not readily accessible for inspection purposes, making it impracticable or impossible to ascertain whether or not cross-connections exist.

✓(c) Type of Protection Required.

1. The type of protection that shall be provided to prevent backflow into the approved water supply shall be commensurate with the degree of hazard that exists on the consumer's premises. The type of protective device that may be required (listing in an increasing level of protection) includes: double check valve assembly (DC), reduced pressure principle backflow prevention device (RP), and an air-gap separation (AG). The water user may choose a higher level of protection than is required by the city. The minimum types of backflow protection required to protect the approved water supply, at the user's water connection to premises with varying degrees of hazard are given in Table 1. Situations which

are not covered in Table 1 shall be evaluated on a case-by-case basis and the appropriate backflow protection shall be determined by the city or health agency.

TABLE 1

TYPE OF BACKFLOW PROTECTION REQUIRED

<u>Degree of Hazard</u>	<u>Minimum Type of Backflow Prevention</u>
<u>A. Sewage and Hazardous Substances.</u>	
1. Premises where the public system is used to supplement the reclaimed water supply.	AG
2. Premises where there are wastewater pumping and/or treatment plants and there is no interconnection with the potable water system. This does not include a single-family residence that has a sewage lift pump. A RP may be provided in lieu of an AG if approved by the health agency and the city.	AG
3. Premises where reclaimed water is used and there is no interconnection with the potable water system. A RP may be provided in lieu of an AG if approved by the health agency and the city.	AG
4. Premises where hazardous substances are handled in any manner in which the substances may enter a potable water system. This does not include a single-family residence that has a sewage lift pump. A RP may be provided in lieu of an AG if approved by the health agency and the city.	AG

5. Premises where there are irrigation systems into which fertilizers, herbicides, or pesticides are, or can be, injected.

RP

B. Auxiliary Water Supplies.

1. Premises where there is an unapproved auxiliary water supply which is interconnected with the public water system. A RP or DC may be provided in lieu of an AG if approved by the health agency and the city.

AG

2. Premises where there is an unapproved auxiliary water supply and there are no interconnections with the public water system. A DC may be provided in lieu of an RP if approved by the health agency and the city.

RP

C. Fire Protection Systems.

1. Premises where the fire system is directly supplied from the public water system and there is an unapproved auxiliary water supply on or to the premises (not interconnected).

DC

2. Premises where the fire system is supplied from the public water system and interconnected with an unapproved auxiliary water supply. An RP may be provided in lieu of an AG if approved by the health agency and the city.

AG

3. Premises where the fire system is supplied from the public water system and where either elevated storage tanks or fire pumps which take suction from the private reservoirs or tanks are used.

DC

- D. Premises where entry is restricted so that inspections for cross-connections cannot be made with sufficient frequency or at sufficiently short notice to assure that cross-connections do not exist.

RP

- E. Premises where there is a repeated history of cross-connections being established or reestablished.

RP

2. Two or more services supplying water from different street mains to the same building, structure, or premises through which an interstreet main flow may occur, shall have at least a standard check valve on each water service to be located adjacent to and on the property side of the respective meters. Such device is necessary to protect the city's mains from pollution or contamination; in such cases the installation of approved backflow devices at such service connections shall be required. (Ord. No. 88-10, §1(part).)

Sec. 26A.4. Backflow prevention devices.

(a) Approved Backflow Prevention Devices.

1. Only backflow prevention devices which have been approved by the city shall be acceptable for installation by a water user connected to the city's potable water system.

2. The city will provide, upon request, to any affected customer with a list of approved backflow prevention devices.

(b) Backflow Prevention Device Installation.

1. Backflow prevention devices shall be installed in a manner prescribed in Section 7603, Title 22 of the California Administrative Code. Location of the devices should be

as close as practical to the user's connection. The city shall have the final authority in determining the required location of a backflow prevention device.

a. Air-gap Separation (AG). The air-gap separation shall be located on the user's side of and as close to the service connection as is practical. All piping from the service connection to the receiving tank shall be above grade and be entirely visible. No water use shall be provided from any point between the service connection and the air-gap separation. The water inlet piping shall terminate a distance of at least two pipe diameters of the supply inlet, but in no case less than one inch above the overflow rim of the receiving tank.

b. Reduced Pressure Principle Backflow Prevention (RP). The approved reduced pressure principle backflow prevention device shall be installed on the user's side of and as close to the service connection as is practical. The device shall be installed a minimum of twelve inches above grade and not more than thirty-six inches above grade measured from the bottom of the device and with a minimum of twelve inches side clearance. The device shall be installed so that any point between the service connection and the RP device shall be protected in a manner approved by the city.

c. Double Check Valve Assembly (DC). The approved double check valve assembly shall be located as close as practical to the user's connection and shall be installed above grade, if possible, and in a manner where it is readily accessible for testing and maintenance. If a double check valve assembly is put below grade, it must be installed in a vault such that there is a minimum of six inches between the bottom of the vault and the bottom of the device, with the test cocks and the side of the vault, and so there is a minimum of three-inches clearance between the other side of the device and the side of the vault. Special consideration must be given to double check valve assemblies of the "Y" type. These devices must be installed on their "side" with the tests cocks in a vertical position so that either check valve may be removed for service without removing the device. Vaults which do not have an integrated bottom must be placed on a three-inch layer of gravel.

(c) Backflow Prevention Device Testing and Maintenance.

1. The owners of any premises on which, or on account of which, backflow prevention devices are installed, shall have the devices tested by a person who has demonstrated their competency in testing of these devices to the city. Backflow prevention devices must be tested at least

annually and immediately after installation, relocation or repair. The city may require a more frequent testing schedule if it is determined to be necessary. No device shall be placed back in service unless it is functioning as required. A report in a form acceptable to the city shall be filed with the city each time a device is tested, relocated, or repaired. These devices shall be serviced, overhauled, or replaced whenever they are found to be defective and all costs of testing, repair, and maintenance shall be borne by the water user.

2. The city will supply affected water users with a list of persons acceptable to the city to test backflow prevention devices. The city will notify affected customers by mail when annual testing of a device is needed and also supply users with the necessary forms which must be filled out each time a device is tested or repaired.

(d) Backflow Prevention Device Removal.

1. Approval must be obtained from the city before a backflow prevention device is removed, relocated, or replaced.

a. Removal: The use of a device may be discontinued and the device removed from service upon presentation of sufficient evidence to the city to verify that a hazard no longer exists or is not likely to be created in the future;

b. Relocation: A device may be relocated following confirmation by the city that the relocation will continue to provide the required protection and satisfy installation requirements. A retest will be required following the relocation of the device;

c. Repair: A device may be removed for repair, provided the water use is either discontinued until repair is completed and the device is returned to service, or the service connection is equipped with other backflow protection approved by the city. A retest will be required following the repair of the device; and

d. Replacement: A device may be removed and replaced provided the water use is discontinued until the replacement device is installed. All replacement devices must be approved by the city and must commensurate with the degree of hazard involved. (Ord. No. 88-10, §1(part).)

Sec. 26A.5. User supervisor. At each premises where it is necessary, in the opinion of the city, a user supervisor shall be designated by and at the expense of the water user.

This user supervisor shall be responsible for the monitoring of the backflow prevention devices and for avoidance of cross-connections. In the event of contamination or pollution of the drinking water system due to a cross-connection on the premises, the city shall be promptly notified by the user supervisor so that appropriate measures may be taken to overcome the contamination. The water user shall inform the city of the user supervisor's identity on, as a minimum, an annual basis and whenever a change occurs. (Ord. No. 88-10, §1(part).)

Sec. 26A.6. Administrative procedures. (a) Water System Survey.

1. The city shall review all requests for new services to determine if backflow protection is needed. Plans and specifications must be submitted to the city upon request for review of possible cross-connection hazards as a condition of service for new service connections. If it is determined that a backflow prevention device is necessary to protect the public water system, the required device must be installed before service will be granted.

2. The city may require an on-premises inspection to evaluate cross-connection hazards. The city will transmit a written notice requesting an inspection appointment to each affected water user. Any customer which cannot or will not allow an on-premises inspection of their piping system shall be required to install the backflow prevention device the city considers necessary.

3. The city may, at its discretion, require a reinspection for cross-connection hazards of any premises to which it serves water. The city will transmit a written notice requesting an inspection appointment to each affected water user. Any customer which cannot or will not allow an on-premises inspection of their piping system shall be required to install the backflow prevention device the city considers necessary.

(b) Customer Notification--Device Installation.

1. The city will notify the water user of the survey findings, listing corrective action to be taken, if required. A period of sixty days will be given to complete all corrective action required including installation of backflow prevention devices.

2. A second notice will be sent to each water user which does not take the required corrective action prescribed in the first notice within the sixty-day period allowed.

The second notice will give the water user a two-week period to take the required corrective action. If no action is taken within the two-week period, the city may terminate water service to the affected water user until the required corrective actions are taken.

(c) Customer Notification--Testing and Maintenance.

1. The city will notify each affected water user when it is time for the backflow prevention device installed on their service connection to be tested. This written notice shall give the water user thirty days to have the device tested and supply the water user with the necessary form to be completed and resubmitted to the city.

2. A second notice shall be sent to each water user which does not have his/her backflow prevention device tested as prescribed in the first notice within the thirty-day period allowed. The second notice will give the water user a two-week period to have his/her backflow prevention device tested. If no action is taken within the two-week period, the city may terminate the water service to the affected water user until the subject device is tested. (Ord. No. 88-10, §1(part).)

Sec. 26A.7. Water service termination. (a) General. When the city encounters water uses that represent a clear and immediate hazard to the potable water supply that cannot be immediately abated, the city shall institute the procedure for discontinuing the city water service.

(b) Basis for Termination. Conditions or water uses that create a basis for water service termination shall include, but are not limited to, the following items:

1. Refusal to install a required backflow prevention device;
2. Refusal to test a backflow prevention device;
3. Refusal to repair a faulty backflow prevention device;
4. Refusal to replace a faulty backflow prevention water system and a sewer line;
5. Direct or indirect connection between the public water system and a sewer line;
6. Unprotected direct or indirect connection between the public water system and a system or equipment containing contaminants;

7. Unprotected direct or indirect connection between the public water system and an auxiliary water system; and

8. A situation which presents an immediate health hazard to the public water system.

(c) Water Service Termination Procedures.

1. For conditions listed in subdivisions 1, 2, 3, or 4 of subsection (b), the city will terminate service to a customer's premise after two written notices have been sent specifying the corrective action needed and the time period in which it must be done. If no action is taken within the allowed time period, water service may be terminated.

2. For conditions listed in subdivisions 4, 5, 6, 7, or 8 of subsection (b), the city will take the following steps:

a. Make reasonable effort to advise water user of intent to terminate water service;

b. Terminate water supply and lock service valve. The water service will remain inactive until correction of violations has been approved by the city. (Ord. No. 88-10, §1(part).)


STATE OF CALIFORNIA)
COUNTY OF IMPERIAL)
CITY OF BRAWLEY)

Introduction & 1st Reading

I, *Janet P. Smith*, City Clerk of the City of Brawley, California, DO HEREBY CERTIFY, that the foregoing Ordinance No. 99-03 was passed and adopted by the City Council of the City of Brawley, California, at a regular meeting held on the 6th day of December, 1999 and that it was so adopted by the following roll call vote: m/s/c Benson/Vasquez

AYES: Benson, Carrillo, Johnson, Shields, Vasquez
NAYES: None
ABSENT: None

Dated: December 6, 1999



Janet P. Smith, City Clerk

2nd Reading & Adoption

I, *Janet P. Smith*, City Clerk of the City of Brawley, California, DO HEREBY CERTIFY, that the foregoing Ordinance No. 99-03 was passed and adopted by the City Council of the City of Brawley, California, at a regular meeting held on the 20th day of December, 1999 and that it was so adopted by the following roll call vote: m/s/c Vasquez/Johnson

AYES: Benson, Carrillo, Johnson, Shields, Vasquez
NAYES: None
ABSENT: None

Dated: December 20, 1999


Janet P. Smith, City Clerk

ORDINANCE NO. 99-03

ORDINANCE OF THE CITY COUNCIL OF THE CITY OF BRAWLEY,
CALIFORNIA, AMENDING ORDINANCE NO. 88-10 WHICH ESTABLISHES
A CROSS CONNECTION WATER CONTROL PROGRAM TO PROTECT THE
MUNICIPAL WATER SYSTEM TO PROVIDE FOR A FEE FOR THE
TESTING OF BACKFLOW PREVENTION DEVICES.

THE CITY COUNCIL OF THE CITY OF BRAWLEY DOES ORDAIN AS FOLLOWS:

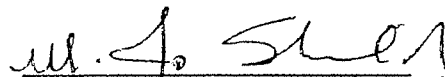
Section 1: Section 26-A4 Backflow Prevention Device Sub-Section C
Backflow Prevention Device Testing and Maintenance is
amended as follows:

Add Section 3: In the event the owner of a Backflow Prevention
device requests City Staff perform the required
testing, a fee of \$25.00 will be charged per each
device tested. City services will include testing
of the device and preparing a report on the
condition of the device. If no repairs or
adjustments are needed, the device will be
certified for one additional year. Any needed
repairs or replacement will be the responsibility
of the device owner.

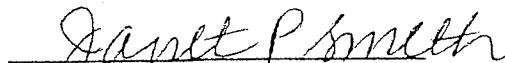
Section 2: This ordinance shall be effective thirty (30) days after
its adoption and the City Clerk shall cause a certified copy of this ordinance
to be published one time within fifteen (15) days after its adoption in the
Imperial Valley Press, a newspaper of general circulation printed in the Imperial
County and circulated in the City of Brawley.

APPROVED, PASSED AND ADOPTED at a regular meeting of the Brawley City
Council held on the 20th day of December, 1999.

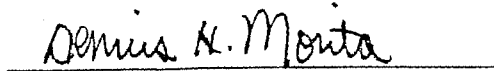
CITY OF BRAWLEY, CALIFORNIA


M. Jo Shields, Mayor

ATTEST:


Janet P. Smith, City Clerk

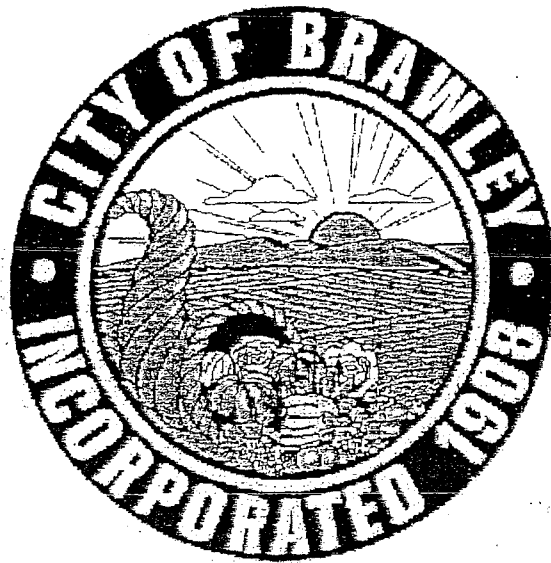
APPROVED AS TO FORM:


Dennis H. Morita, City Attorney

APPENDIX I

City of Brawley Wastewater Pretreatment Ordinance November 2001

CITY OF BRAWLEY



WASTEWATER PRETREATMENT ORDINANCE

ADOPTED:

NOVEMBER 20, 2001

ORDINANCE NO. 2001-08

ORDINANCE OF THE CITY OF BRAWLEY, CALIFORNIA, AMENDING ORDINANCE NO. 739 REGULATING SEWER CONSTRUCTION & USE & INDUSTRIAL WASTEWATER DISCHARGE FOR USERS OF PUBLICLY OWNED TREATMENT WORKS (POTW) FOR THE CITY OF BRAWLEY (PREVENTION OF THE INTRODUCTION OF POLLUTANTS THAT WILL PASS THROUGH THE CITY OF BRAWLEY WASTEWATER TREATMENT FACILITY INADEQUATELY TREATED; APPLICATION & ISSUANCE OF A PERMIT, ADMINISTRATIVE, JUDICIAL & SUPPLEMENTAL ENFORCEMENT)

The City Council of the City of Brawley does ordain as follows:

SECTION 1: Sections 301, 303, 304 and 305 of Part III of Ordinance Number 739 are hereby repealed.

SECTION 2: Section 22.3 of Chapter 22 is hereby recodified to become part of Article I, Chapter 22.

SECTION 3: Article II of Chapter 22, commencing with section 22.10, is hereby enacted to read as follows:

ARTICLE II

WASTEWATER PRETREATMENT

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22.10 Purpose and Policy

This ordinance sets forth uniform requirements for users of the Publicly Owned Treatment Works for the City of Brawley and enables the City to comply with all applicable State and Federal laws, including the Clean Water Act (33 United States Code § 1251 *et seq.*) and the General Pretreatment Regulations (40 Code of Federal Regulations Part 403). The objectives of this ordinance are:

- (a) To prevent the introduction of pollutants into the Publicly Owned Treatment Works that will interfere with its operation;
- (b) To prevent the introduction of pollutants into the Publicly Owned Treatment Works that will pass through the Publicly Owned Treatment Works, inadequately treated, into receiving waters, or otherwise be incompatible with the Publicly Owned Treatment Works;
- (c) To protect both Publicly Owned Treatment Works personnel who may be affected by wastewater and sludge in the course of their employment and the general public;
- (d) To promote reuse and recycling of wastewater and sludge from the Publicly Owned Treatment Works;
- (e) To provide for fees for the equitable distribution of the cost of operation, maintenance, and improvement of the Publicly Owned Treatment Works; and
- (f) To enable the City of Brawley to comply with its National Pollutant Discharge Elimination System permit conditions, sludge use and disposal requirements, and any other Federal or State laws to which the Publicly Owned Treatment Works is subject.

This ordinance shall apply to all users of the Publicly Owned Treatment Works. The ordinance authorizes the issuance of wastewater discharge permits; provides for monitoring, compliance, and enforcement activities; establishes administrative review procedures; requires user reporting; and provides for the setting of fees for the equitable distribution of costs resulting from the program established herein.

22.11 Administration

Except as otherwise provided herein, the Public Works Director shall administer, implement, and enforce the provisions of this ordinance. Any powers granted to or duties imposed upon the Public Works Director may be delegated by the Public Works Director to other City personnel.

22.12 Abbreviations

The following abbreviations, when used in this ordinance, shall have the designated meanings:

- BOD - Biochemical Oxygen Demand
- CFR - Code of Federal Regulations. Where necessary to the enforcement of this ordinance cited regulations shall be deemed incorporated by reference.
- COD - Chemical Oxygen Demand
- EPA - U.S. Environmental Protection Agency
- gpd - gallons per day
- mg/l - milligrams per liter
- NPDES - National Pollutant Discharge Elimination System
- POTW - Publicly Owned Treatment Works
- RCRA - Resource Conservation and Recovery Act
- SIC - Standard Industrial Classification
- TSS - Total Suspended Solids
- U.S.C. - United States Code. Where necessary to the enforcement of this ordinance cited statutes shall be deemed incorporated by reference.

22.13 Definitions

Unless a provision explicitly states otherwise, the following terms and phrases, as used in this ordinance, shall have the meanings hereinafter designated.

- (a) Act or "the Act." The Federal Water Pollution Control Act, also known as the Clean Water Act, as amended, 33 U.S.C. § 1251 *et seq.*
- (b) Approval Authority. The State of California, Colorado River Basin Regional Water Quality Control Board.

- (c) Authorized Representative of the User.
- (1) If the user is a corporation:
 - (i) The president, secretary, treasurer, or a vice-president of the corporation in charge of a principal business function, or any other person who performs similar policy or decision-making functions for the corporation; or
 - (ii) The manager of one or more manufacturing, production, or operation facilities employing more than two hundred fifty (250) persons or having gross annual sales or expenditures exceeding twenty-five (25) million dollars (in second-quarter 1980 dollars), if authority to sign documents has been assigned or delegated to the manager in accordance with corporate procedures.
 - (2) If the user is a partnership or sole proprietorship: a general partner or proprietor, respectively.
 - (3) If the user is a Federal, State, or local governmental facility: a director or highest official appointed or designated to oversee the operation and performance of the activities of the government facility, or their designee.
 - (4) The individuals described in paragraphs 1 through 3, above, may designate another authorized representative if the authorization is in writing, the authorization specifies the individual or position responsible for the overall operation of the facility from which the discharge originates or having overall responsibility for environmental matters for the company, and the written authorization is submitted to the City.
- (d) Biochemical Oxygen Demand or BOD. The quantity of oxygen utilized in the biochemical oxidation of organic matter under standard laboratory procedures for five (5) days at 20° centigrade, usually expressed as a concentration (e.g., mg/l).
- (e) Categorical Pretreatment Standard or Categorical Standard. Any regulation containing pollutant discharge limits promulgated by EPA in accordance with Sections 307(b) and (c) of the Act (33 U.S.C. § 1317) which apply to a specific category of users and which appear in 40 CFR Chapter I, Subchapter N, Parts 405-471.
- (f) The City of Brawley as represented by the City Council of Brawley.
- (g) Environmental Protection Agency or EPA. The U.S. Environmental Protection Agency or, where appropriate, the Regional Water Management Division Director, or other duly authorized official of said agency.
- (h) Existing Source. Any source of discharge, the construction or operation of which commenced prior to the publication by EPA of proposed categorical pretreatment

standards, which will be applicable to such source if the standard is thereafter promulgated in accordance with Section 307 of the Act.

- (i) Grab Sample. A sample which is taken from a wastestream without regard to the flow in the wastestream and over a period of time not to exceed fifteen (15) minutes.
- (j) Indirect Discharge or Discharge. The introduction of pollutants into the POTW from any nondomestic source regulated under Section 307(b), (c), or (d) of the Act.
- (k) Instantaneous Maximum Allowable Discharge Limit. The maximum concentration of a pollutant allowed to be discharged at any time, determined from the analysis of any discrete or composited sample collected, independent of the industrial flow rate and the duration of the sampling event.
- (l) Interference. A discharge, which alone or in conjunction with a discharge or discharges from other sources, inhibits or disrupts the POTW, its treatment processes or operations or its sludge processes, use or disposal; and therefore, is a cause of a violation of the City of Brawley's NPDES permit or of the prevention of sewage sludge use or disposal in compliance with any of the following statutory/regulatory provisions or permits issued thereunder, or any more stringent State or local regulations: Section 405 of the Act; the Solid Waste Disposal Act, including Title II commonly referred to as the Resource Conservation and Recovery Act (RCRA); any State regulations contained in any State sludge management plan prepared pursuant to Subtitle D of the Solid Waste Disposal Act; the Clean Air Act; the Toxic Substances Control Act; and the Marine Protection, Research, and Sanctuaries Act.
- (m) Medical Waste. Isolation wastes, infectious agents, human blood and blood products, pathological wastes, sharps, body parts, contaminated bedding, surgical wastes, potentially contaminated laboratory wastes, and dialysis wastes.
- (n) New Source.
 - (1) Any building, structure, facility, or installation from which there is (or may be) a discharge of pollutants, the construction of which commenced after the publication of proposed pretreatment standards under Section 307(c) of the Act which will be applicable to such source if such standards are thereafter promulgated in accordance with that section, provided that:
 - (i) The building, structure, facility, or installation is constructed at a site at which no other source is located; or
 - (ii) The building, structure, facility, or installation totally replaces the process or production equipment that causes the discharge of pollutants at an existing source; or

- (iii) The production or wastewater generating processes of the building, structure, facility, or installation are substantially independent of an existing source at the same site. In determining whether these are substantially independent, factors such as the extent to which the new facility is integrated with the existing plant, and the extent to which the new facility is engaged in the same general type of activity as the existing source, should be considered.
- (2) Construction on a site at which an existing source is located results in a modification rather than a new source if the construction does not create a new building, structure, facility, or installation meeting the criteria of Section (1)(ii) or (iii) above but otherwise alters, replaces, or adds to existing process or production equipment.
- (3) Construction of a new source as defined under this paragraph has commenced if the owner or operator has:
 - (i) Begun, or caused to begin, as part of a continuous onsite construction program
 - (a) any placement, assembly, or installation of facilities or equipment; or
 - (b) significant site preparation work including clearing, excavation, or removal of existing buildings, structures, or facilities which is necessary for the placement, assembly, or installation of new source facilities or equipment; or
 - (ii) Entered into a binding contractual obligation for the purchase of facilities or equipment which are intended to be used in its operation within a reasonable time. Options to purchase or contracts which can be terminated or modified without substantial loss, and contracts for feasibility, engineering, and design studies do not constitute a contractual obligation under this paragraph.
- (o) Noncontact Cooling Water. Water used for cooling which does not come into direct contact with any raw material, intermediate product, waste product, or finished product.
- (p) Pass Through. A discharge which exits the POTW into waters of the United States in quantities or concentrations which, alone or in conjunction with a discharge or discharges from other sources, is a cause of a violation of any requirement of the City of Brawley's NPDES permit, including an increase in the magnitude or duration of a violation.

- (q) Person. Any individual, partnership, copartnership, firm, company, corporation, association, joint stock company, trust, estate, governmental entity, or any other legal entity; or their legal representatives, agents, or assigns. This definition includes all Federal, State, and local governmental entities.
- (r) pH. A measure of the acidity or alkalinity of a solution, expressed in standard units.
- (s) Pollutant. Dredged spoil, solid waste, incinerator residue, filter backwash, sewage, garbage, sewage sludge, munitions, medical wastes, chemical wastes, biological materials, radioactive materials, heat, wrecked or discarded equipment, rock, sand, cellar dirt, municipal, agricultural and industrial wastes, and certain characteristics of wastewater (e.g., pH, temperature, TSS, turbidity, color, BOD, COD, toxicity, or odor).
- (t) Pretreatment. The reduction of the amount of pollutants, the elimination of pollutants, or the alteration of the nature of pollutant properties in wastewater prior to, or in lieu of, introducing such pollutants into the POTW. This reduction or alteration can be obtained by physical, chemical, or biological processes; by process changes; or by other means, except by diluting the concentration of the pollutants unless allowed by an applicable pretreatment standard.
- (u) Pretreatment Requirements. Any substantive or procedural requirement related to pretreatment imposed on a user, other than a pretreatment standard.
- (v) Pretreatment Standards or Standards. Pretreatment standards shall mean prohibited discharge standards, categorical pretreatment standards, and local limits.
- (w) Prohibited Discharge Standards or Prohibited Discharges. Absolute prohibitions against the discharge of certain substances; these prohibitions appear in Section 22.15 of this ordinance.
- (x) Publicly Owned Treatment Works or POTW. A "treatment works," as defined by Section 212 of the Act (33 U.S.C. §1292) which is owned by the City of Brawley. This definition includes any devices or systems used in the collection, storage, treatment, recycling, and reclamation of sewage or industrial wastes of a liquid nature and any conveyances which convey wastewater to a treatment plant.
- (y) Septic Tank Waste. Any sewage from holding tanks such as vessels, chemical toilets, campers, trailers, and septic tanks.
- (z) Sewage. Human excrement and gray water (household showers, dishwashing operations, etc.).

(aa) Significant Industrial User.

- (1) A user subject to categorical pretreatment standards; or
- (2) A user that:
 - (i) Discharges an average of twenty-five thousand (25,000) gpd or more of process wastewater to the POTW (excluding sanitary, noncontact cooling, and boiler blowdown wastewater);
 - (ii) Contributes a process wastestream which makes up five (5) percent or more of the average dry weather hydraulic or organic capacity of the POTW treatment plant; or
 - (iii) Is designated as such by the City of Brawley on the basis that it has a reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement.
- (3) Upon a finding that a user meeting the criteria in Subsection (2) has no reasonable potential for adversely affecting the POTW's operation or for violating any pretreatment standard or requirement, the City of Brawley may at any time, on its own initiative or in response to a petition received from a user, and in accordance with procedures in 40 CFR 403.8(f)(6), determine that such user should not be considered a significant industrial user.

(bb) Slug Load or Slug. Any discharge at a flow rate or concentration which could cause a violation of the prohibited discharge standards in Section 22.15 of this ordinance.

(cc) Standard Industrial Classification (SIC) Code. A classification pursuant to the *Standard Industrial Classification Manual* issued by the United States Office of Management and Budget.

(dd) Storm Water. Any flow occurring during or following any form of natural precipitation, and resulting from such precipitation.

(ee) Superintendent. The City Manager or such person as the City Manager may from time to time designate.

(ff) Suspended Solids. The total suspended matter that floats on the surface of, or is suspended in, water, wastewater, or other liquid, and which is removable by laboratory filtering.

(gg) User or Industrial User. A source of indirect discharge.

(hh) Wastewater. Liquid and water-carried industrial wastes and sewage from residential

dwellings, commercial buildings, industrial and manufacturing facilities, and institutions, whether treated or untreated, which are contributed to the POTW.

- (ii) Wastewater Treatment Plant or Treatment Plant. That portion of the POTW which is designed to provide treatment of municipal sewage and industrial waste.

22.14 Reserved

22.15 Prohibited Discharge Standards

- (a) General Prohibitions. No user shall introduce or cause to be introduced into the POTW any pollutant or wastewater which causes pass through or interference. These general prohibitions apply to all users of the POTW whether or not they are subject to categorical pretreatment standards or any other National, State, or local pretreatment standards or requirements.
- (b) Specific Prohibitions. No user shall introduce or cause to be introduced into the POTW the following pollutants, substances, or wastewater:
 - (1) Pollutants which create a fire or explosive hazard in the POTW, including, but not limited to, wastestreams with a closed-cup flashpoint of less than 140°F (60°C) using the test methods specified in 40 CFR 261.21;
 - (2) Wastewater having a pH less than 6.0 or more than 9.0 or otherwise causing corrosive structural damage to the POTW or equipment;
 - (3) Solid or viscous substances in amounts which will cause obstruction of the flow in the POTW resulting in interference but in no case solids greater than three eighths inch(es) (3/8") or zero point nine five centimeter(s) (0.95 cm) in any dimension;
 - (4) Pollutants, including oxygen-demanding pollutants (BOD, etc.), released in a discharge at a flow rate and/or pollutant concentration which, either singly or by interaction with other pollutants, will cause interference with the POTW;
 - (5) Wastewater having a temperature greater than 140°F (60°C), or which will inhibit biological activity in the treatment plant resulting in interference, but in no case wastewater which causes the temperature at the introduction into the treatment plant to exceed 104°F (40°C);
 - (6) Petroleum oil, non-biodegradable cutting oil, or products of mineral oil origin, in amounts that will cause interference or pass through;
 - (7) Pollutants which result in the presence of toxic gases, vapors, or fumes within the POTW in a quantity that may cause acute worker health and safety problems;

- (8) Trucked or hauled pollutants, except at discharge points designated by the Superintendent in accordance with Section 22.28 of this ordinance;
- (9) Noxious or malodorous liquids, gases, solids, or other wastewater which, either singly or by interaction with other wastes, are sufficient to create a public nuisance or a hazard to life, or to prevent entry into the sewers for maintenance or repair;
- (10) Wastewater which imparts color which cannot be removed by the treatment process, such as, but not limited to, dye wastes and vegetable tanning solutions, which consequently imparts color to the treatment plant's effluent, thereby violating the City of Brawley's NPDES permit;
- (11) Wastewater containing any radioactive wastes or isotopes except in compliance with applicable State or Federal regulations;
- (12) Storm water, surface water, ground water, artesian well water, roof runoff, subsurface drainage, swimming pool drainage, condensate, deionized water, non-contact cooling water, and unpolluted wastewater, unless specifically authorized by the Superintendent;
- (13) Sludges, screenings, or other residues from the pretreatment of industrial wastes;
- (14) Medical wastes, except as specifically authorized by the Superintendent in a wastewater discharge permit;
- (15) Wastewater causing, alone or in conjunction with other sources, the treatment plant's effluent to fail a toxicity test;
- (16) Detergents, surface-active agents, or other substances which may cause excessive foaming in the POTW;
- (17) Fats, oils, or greases of animal or vegetable origin in concentrations greater than 250 mg/l; or
- (18) Wastewater causing two readings on an explosion hazard meter at the point of discharge into the POTW, or at any point in the POTW, of more than fifty percent (50%) or any single reading over seventy five percent (75%) of the Lower Explosive Limit of the meter.

Pollutants, substances, or wastewater prohibited by this section shall not be processed or stored in such a manner that they could be discharged to the POTW.

22.16 National Categorical Pretreatment Standards

The categorical pretreatment standards found at 40 CFR Chapter I, Subchapter N, Parts 405-471 are hereby incorporated.

- (a) Where a categorical pretreatment standard is expressed only in terms of either the mass or the concentration of a pollutant in wastewater, the Superintendent may impose equivalent concentration or mass limits in accordance with 40 CFR 403.6(c).
- (b) When wastewater subject to a categorical pretreatment standard is mixed with wastewater not regulated by the same standard, the Superintendent shall impose an alternate limit using the combined wastestream formula in 40 CFR 403.6(e).
- (c) A user may obtain a variance from a categorical pretreatment standard if the user can prove, pursuant to the procedural and substantive provisions in 40 CFR 403.13, that factors relating to its discharge are fundamentally different from the factors considered by EPA when developing the categorical pretreatment standard.
- (d) A user may obtain a net gross adjustment to a categorical standard in accordance with 40 CFR 403.15.

22.17 State Pretreatment Standards

All applicable state pretreatment standards shall be incorporated as a portion of this ordinance.

22.18 Local Limits

The following pollutant limits are established to protect against pass through and interference. No person shall discharge wastewater containing in excess of the following instantaneous maximum allowable discharge limits:

CONSTITUENT	mg/L
Arsenic	0.9
Cadmium	1
Chromium (Total)	2
Copper	3
Lead	2

Mercury	0.003
Nickel	4.7
Silver	2.8
Zinc	6.2
Cyanide	3
Polychlorinated Biphenyls	0.01
Pesticides	0.01
Total Toxic Organics	0.06
Oil and Grease	100/40**
pH (Units)	6.0-9.0
Temp °F	140
BOD (mg/l)	250*
SS (mg/l)	250*
Ammonia Nitrogen	90/40***
Total Nitrogen	40*
Total Phosphorus as Phosphorus (P)	8*
Orthophosphate as Phosphorus	5*
Total Petroleum Hydrocarbons	2.5*

* Limits to be reviewed based on data to be obtained.

** The 100 mg/l is an interim limit. The 40 mg/l limit will become effective within 6 months from the date of beef plant start-up.

*** The 90 mg/l is an interim limit. The 40 mg/l limit will become effective 180 days from beef plant start-up (the date wastewater starts to flow into the beef plant pretreatment pond system)

The above limits apply at the point where the wastewater is discharged to the POTW. All concentrations for metallic substances are for "total" metal unless indicated otherwise. The Superintendent may impose mass limitations in addition to, or in place of, the concentration-based limitations above.

22.19 Brawley's Right of Revision

The City of Brawley reserves the right to make revisions to the standards or requirements on discharges to the POTW.

22.20 Dilution

No user shall ever increase the use of process water, or in any way attempt to dilute a discharge, as a partial or complete substitute for adequate treatment to achieve compliance with a discharge limitation unless expressly authorized by an applicable pretreatment standard or requirement. The Superintendent may impose mass limitations on users who are using dilution to meet applicable pretreatment standards or requirements, or in other cases when the imposition of mass limitations is appropriate.

22.21-24 Reserved

22.25 Pretreatment Facilities

Users shall provide wastewater treatment as necessary to comply with this ordinance and shall achieve compliance with all categorical pretreatment standards, local limits, and the prohibitions set out in Section 22.15 of this ordinance within the time limitations specified by EPA, the State, or the Superintendent, whichever is more stringent. Any facilities necessary for compliance shall be provided, operated, and maintained at the user's expense. Detailed plans describing such facilities and operating procedures shall be submitted to the Superintendent for review, and shall be acceptable to the Superintendent before such facilities are constructed. The review of such plans and operating procedures shall in no way relieve the user from the responsibility of modifying such facilities as necessary to produce a discharge acceptable to the City of Brawley under the provisions of this ordinance.

22.26 Additional Pretreatment Measures

- (a) Whenever deemed necessary, the Superintendent may require users to restrict their discharge during peak flow periods, designate that certain wastewater be discharged only into specific sewers, relocate and/or consolidate points of discharge, separate sewage wastestreams from industrial wastestreams, and such other conditions as may be necessary

to protect the POTW and determine the user's compliance with the requirements of this ordinance.

- (b) The Superintendent may require any person discharging into the POTW to install and maintain, on their property and at their expense, a suitable storage and flow-control facility to ensure equalization of flow. A wastewater discharge permit may be issued solely for flow equalization.
- (c) Grease, oil, and sand interceptors shall be provided when, in the opinion of the Superintendent, they are necessary for the proper handling of wastewater containing excessive amounts of grease and oil, or sand; except that such interceptors shall not be required for residential users. All interception units shall be of type and capacity approved by the Superintendent and shall be so located to be easily accessible for cleaning and inspection. Such interceptors shall be inspected, cleaned, and repaired regularly, as needed, by the user at their expense.
- (d) Users with the potential to discharge flammable substances may be required to install and maintain an approved combustible gas detection meter.

22.27 Accidental Discharge/Slug Control Plans

At least once every two (2) years, the Superintendent shall evaluate whether each significant industrial user needs an accidental discharge/slug control plan. The Superintendent may require any user to develop, submit for approval, and implement such a plan. Alternatively, the Superintendent may develop such a plan for any user. An accidental discharge/slug control plan shall address, at a minimum, the following:

- (a) Description of discharge practices, including nonroutine batch discharges;
- (b) Description of stored chemicals;
- (c) Procedures for immediately notifying the Superintendent of any accidental or slug discharge, as required by Section 22.55 of this ordinance; and
- (d) Procedures to prevent adverse impact from any accidental or slug discharge. Such procedures include, but are not limited to, inspection and maintenance of storage areas, handling and transfer of materials, loading and unloading operations, control of plant site runoff, worker training, building of containment structures or equipment, measures for containing toxic organic pollutants, including solvents, and/or measures and equipment for emergency response.

22.28 Hauled Wastewater

- (a) Septic tank waste may be introduced into the POTW only at locations designated by the Superintendent, and at such times as are established by the Superintendent. Such waste shall not violate Section 22.15 of this ordinance or any other requirements established by the City of Brawley. The Superintendent may require septic tank waste haulers to obtain wastewater discharge permits.

22.29 Reserved

22.30 Wastewater Analysis

When requested by the Superintendent, a user must submit information on the nature and characteristics of its wastewater within fourteen (14) days of the request. The Superintendent is authorized to prepare a form for this purpose and may periodically require users to update this information.

22.31 Wastewater Discharge Permit Requirement

- (a) No significant industrial user shall discharge wastewater into the POTW without first obtaining a wastewater discharge permit from the Superintendent, except that a significant industrial user that has filed a timely application pursuant to Section 22.32 of this ordinance may continue to discharge for the time period specified therein.
- (b) The Superintendent may require other users to obtain wastewater discharge permits as necessary to carry out the purposes of this ordinance.
- (c) Any violation of the terms and conditions of a wastewater discharge permit shall be deemed a violation of this ordinance and subjects the wastewater discharge permittee to the sanctions set out in Sections 22.70 through 22.87 of this ordinance. Obtaining a wastewater discharge permit does not relieve a permittee of its obligation to comply with all Federal and State pretreatment standards or requirements or with any other requirements of Federal, State, and local law.

22.32 Wastewater Discharge Permitting: Existing Connections

Any user required to obtain a wastewater discharge permit who was discharging wastewater into the POTW prior to the effective date of this ordinance and who wishes to continue such discharges in the future, shall, within sixty (60) days after said date, apply to the Superintendent for a wastewater discharge permit in accordance with Section 22.34 of this ordinance, and shall not cause or allow discharges to the POTW to continue after ninety 365 days of the effective date of this ordinance except

in accordance with a wastewater discharge permit issued by the Superintendent.

22.33 Wastewater Discharge Permitting: New Connections

Any user required to obtain a wastewater discharge permit who proposes to begin or recommence discharging into the POTW must obtain such permit prior to the beginning or recommencing of such discharge. An application for this wastewater discharge permit, in accordance with Section 22.34 of this ordinance, must be filed at least sixty (60) days prior to the date upon which any discharge will begin or recommence.

22.34 Wastewater Discharge Permit Application Contents

All users required to obtain a wastewater discharge permit must submit a permit application. The Superintendent may require all users to submit as part of an application the following information:

- (a) All information required by Section 22.50(b) of this ordinance;
- (b) Description of activities, facilities, and plant processes on the premises, including a list of all raw materials and chemicals used or stored at the facility which are, or could accidentally or intentionally be, discharged to the POTW;
- (c) Number and type of employees, hours of operation, and proposed or actual hours of operation;
- (d) Each product produced by type, amount, process or processes, and rate of production;
- (e) Type and amount of raw materials processed (average and maximum per day);
- (f) Site plans, floor plans, mechanical and plumbing plans, and details to show all sewers, floor drains, and appurtenances by size, location, and elevation, and all points of discharge;
- (g) Time and duration of discharges; and
- (h) Any other information as may be deemed necessary by the Superintendent to evaluate the wastewater discharge permit application.

Incomplete or inaccurate applications will not be processed and will be returned to the user for revision.

22.35 Application Signatories and Certification

All wastewater discharge permit applications and user reports must be signed by an authorized representative of the user and contain the following certification statement:

"I certify under penalty of law that this document and all attachments were prepared under my direction or supervision in accordance with a system designed to assure that qualified personnel properly gather and evaluate the information submitted. Based on my inquiry of the person or persons who manage the system, or those persons directly responsible for gathering the information, the information submitted is, to the best of my knowledge and belief, true, accurate, and complete. I am aware that there are significant penalties for submitting false information, including the possibility of fine and imprisonment for knowing violations."

22.36 Wastewater Discharge Permit Decisions

The Superintendent will evaluate the data furnished by the user and may require additional information. Within thirty (30) days of receipt of a complete wastewater discharge permit application, the Superintendent will determine whether or not to issue a wastewater discharge permit. The Superintendent may deny any application for a wastewater discharge permit.

22.37-39 Reserved

22.40 Wastewater Discharge Permit Duration

A wastewater discharge permit shall be issued for five (5) years from the effective date of the permit. A wastewater discharge permit may be issued for a period less than five (5) years, at the discretion of the Superintendent. Each wastewater discharge permit will indicate a specific date upon which it will expire.

22.41 Wastewater Discharge Permit Contents

A wastewater discharge permit shall include such conditions as are deemed reasonably necessary by the Superintendent to prevent pass through or interference, protect the quality of the water body receiving the treatment plant's effluent, protect worker health and safety, facilitate sludge management and disposal, and protect against damage to the POTW.

(a) Wastewater discharge permits must contain:

- (1) A statement that indicates wastewater discharge permit duration, which in no event shall exceed five (5) years.
- (2) A statement that the wastewater discharge permit is nontransferable without prior notification to the City of Brawley in accordance with Section 22.44 of this ordinance, and provisions for furnishing the new owner or operator with a copy of the existing wastewater discharge permit;
- (3) Effluent limits based on applicable pretreatment standards;
- (4) Self monitoring, sampling, reporting, notification, and record-keeping requirements. These requirements shall include an identification of pollutants to be monitored, sampling location, sampling frequency, and sample type based on Federal, State, and local law; and
- (5) A statement of applicable civil and criminal penalties for violation of pretreatment standards and requirements, and any applicable compliance schedule. Such schedule may not extend the time for compliance beyond that required by applicable Federal, State, or local law.

(b) Wastewater discharge permits may contain, but need not be limited to, the following conditions:

- (1) Limits on the average and/or maximum rate of discharge, time of discharge, and/or requirements for flow regulation and equalization;
- (2) Requirements for the installation of pretreatment technology, pollution control, or construction of appropriate containment devices, designed to reduce, eliminate, or prevent the introduction of pollutants into the treatment works;
- (3) Requirements for the development and implementation of spill control plans or other special conditions including management practices necessary to adequately prevent accidental, unanticipated, or nonroutine discharges;
- (4) Development and implementation of waste minimization plans to reduce the amount of pollutants discharged to the POTW;
- (5) The unit charge or schedule of user charges and fees for the management of the wastewater discharged to the POTW;

- (6) Requirements for installation and maintenance of inspection and sampling facilities and equipment;
- (7) A statement that compliance with the wastewater discharge permit does not relieve the permittee of responsibility for compliance with all applicable Federal and State pretreatment standards, including those which become effective during the term of the wastewater discharge permit; and
- (8) Other conditions as deemed appropriate by the Superintendent to ensure compliance with this ordinance, and State and Federal laws, rules, and regulations.

22.42 Wastewater Discharge Permit Appeals

The Superintendent shall provide public notice of the issuance of a wastewater discharge permit. Any person, including the user, may petition the Superintendent to reconsider the terms of a wastewater discharge permit within sixty (60) days of notice of its issuance.

- (a) Failure to submit a timely petition for review shall be deemed to be a waiver of the administrative appeal.
- (b) In its petition, the appealing party must indicate the wastewater discharge permit provisions objected to, the reasons for this objection, and the alternative condition, if any, it seeks to place in the wastewater discharge permit.
- (c) The effectiveness of the wastewater discharge permit shall not be stayed pending the appeal.
- (d) If the Superintendent fails to act within sixty (60) days, a request for reconsideration shall be deemed to be denied. Decisions not to reconsider a wastewater discharge permit, not to issue a wastewater discharge permit, or not to modify a wastewater discharge permit may be appealed as provided herein.
 - (a) Appeals shall be in writing and shall be accompanied by a fee established by the City Council to defray all expenses and costs associated with processing the appeal.
 - (b) The City Clerk shall set the matter for hearing before the City Council. The decision of the Council shall be an administrative action for the purpose of judicial review.
- (e) Aggrieved parties seeking review of the final administrative wastewater discharge permit decision must do so by filing an appeal with the City Clerk of the City of Brawley.

22.43 Wastewater Discharge Permit Modification

The Superintendent may modify a wastewater discharge permit for good cause, including, but not limited to, the following reasons:

- (a) To incorporate any new or revised Federal, State, or local pretreatment standards or requirements;
- (b) To address significant alterations or additions to the user's operation, processes, or wastewater volume or character since the time of wastewater discharge permit issuance;
- (c) A change in the POTW caused by mechanical failure, natural disaster or war that requires either a temporary or permanent reduction or elimination of the authorized discharge;
- (d) Information indicating that the permitted discharge poses a threat to the City of Brawley POTW, the City of Brawley's personnel, or the receiving waters;
- (e) Violation of any terms or conditions of the wastewater discharge permit;
- (f) Misrepresentations or failure to fully disclose all relevant facts in the wastewater discharge permit application or in any required reporting;
- (g) Revision of or a grant of variance from categorical pretreatment standards pursuant to 40 CFR 403.13;
- (h) To correct typographical or other errors in the wastewater discharge permit; or
- (i) To reflect a transfer of the facility ownership or operation to a new owner or operator.

22.44 Wastewater Discharge Permit Transfer

Wastewater discharge permits may be transferred to a new owner or operator only if the permittee gives at least thirty (30) days advance notice to the Superintendent and the Superintendent approves the wastewater discharge permit transfer. The notice to the Superintendent must include a written certification by the new owner or operator which:

- (a) States that the new owner and/or operator has no immediate intent to change the facility's operations and processes;
- (b) Identifies the specific date on which the transfer is to occur; and
- (c) Acknowledges full responsibility for complying with the existing wastewater discharge permit.

Failure to provide advance notice of a transfer renders the wastewater discharge permit void as of the date of facility transfer.

22.45 Wastewater Discharge Permit Revocation

The Superintendent may revoke a wastewater discharge permit for good cause, including, but not limited to, the following reasons:

- (a) Failure to notify the Superintendent of significant changes to the wastewater prior to the changed discharge;
- (b) Failure to provide prior notification to the Superintendent of changed conditions pursuant to Section 22.54 of this ordinance;
- (c) Misrepresentation or failure to fully disclose all relevant facts in the wastewater discharge permit application;
- (d) Falsifying self-monitoring reports;
- (e) Tampering with monitoring equipment;
- (f) Refusing to allow the Superintendent timely access to the facility premises and records;
- (g) Failure to meet effluent limitations;
- (h) Failure to pay fines;
- (i) Failure to pay sewer charges;
- (j) Failure to meet compliance schedules;
- (k) Failure to complete a wastewater survey or the wastewater discharge permit application;
- (l) Failure to provide advance notice of the transfer of business ownership of a permitted facility; or
- (m) Violation of any pretreatment standard or requirement, or any terms of the wastewater discharge permit or this ordinance.

Wastewater discharge permits shall be voidable upon cessation of operations or transfer of business ownership. All wastewater discharge permits issued to a particular user are void upon the issuance of

a new wastewater discharge permit to that user.

22.46 Wastewater Discharge Permit Reissuance

A user with an expiring wastewater discharge permit shall apply for wastewater discharge permit reissuance by submitting a complete permit application, in accordance with Section 22.34 of this ordinance, a minimum of ninety (90) days prior to the expiration of the user's existing wastewater discharge permit.

22.47 Regulation of Waste Received from Other Jurisdictions

- (a) If another municipality, or user located within another municipality, contributes wastewater to the POTW, the Superintendent shall enter into an intermunicipal agreement with the contributing municipality.
- (b) Prior to entering into an agreement required by paragraph (a), above, the Superintendent shall request the following information from the contributing municipality:
 - (1) A description of the quality and volume of wastewater discharged to the POTW by the contributing municipality;
 - (2) An inventory of all users located within the contributing municipality that are discharging to the POTW; and
 - (3) Such other information as the Superintendent may deem necessary.
- (c) An intermunicipal agreement, as required by paragraph (a), above, shall contain the following conditions:
 - (1) A requirement for the contributing municipality to adopt a sewer use ordinance which is at least as stringent as this ordinance and local limits which are at least as stringent as those set out in Section 22.18 of this ordinance. The requirement shall specify that such ordinance and limits must be revised as necessary to reflect changes made to the City of Brawley ordinance or local limits;
 - (2) A requirement for the contributing municipality to submit a revised user inventory on at least an annual basis;
 - (3) A provision specifying which pretreatment implementation activities, including wastewater discharge permit issuance, inspection and sampling, and enforcement, will be conducted by the contributing municipality; which of these activities will be

conducted by the Superintendent; and which of these activities will be conducted jointly by the contributing municipality and the Superintendent;

- (4) A requirement for the contributing municipality to provide the Superintendent with access to all information that the contributing municipality obtains as part of its pretreatment activities;
- (5) Limits on the nature, quality, and volume of the contributing municipality's wastewater at the point where it discharges to the POTW;
- (6) Requirements for monitoring the contributing municipality's discharge;
- (7) A provision ensuring the Superintendent access to the facilities of users located within the contributing municipality's jurisdictional boundaries for the purpose of inspection, sampling, and any other duties deemed necessary by the Superintendent; and
- (8) A provision specifying remedies available for breach of the terms of the intermunicipal agreement.

22.48-49 Reserved

22.50 Baseline Monitoring Reports

- (a) Within either one hundred eighty (180) days after the effective date of a categorical pretreatment standard, or the final administrative decision on a category determination under 40 CFR 403.6(a)(4), whichever is later, existing categorical users currently discharging to or scheduled to discharge to the POTW shall submit to the Superintendent a report which contains the information listed in paragraph B, below. At least ninety (90) days prior to commencement of their discharge, new sources, and sources that become categorical users subsequent to the promulgation of an applicable categorical standard, shall submit to the Superintendent a report which contains the information listed in paragraph B, below. A new source shall report the method of pretreatment it intends to use to meet applicable categorical standards. A new source also shall give estimates of its anticipated flow and quantity of pollutants to be discharged.
- (b) Users described above shall submit the information set forth below.
 - (1) Identifying Information. The name and address of the facility, including the name of the operator and owner.
 - (2) Environmental Permits. A list of any environmental control permits held by or for the facility.

- (3) Description of Operations. A brief description of the nature, average rate of production, and standard industrial classifications of the operation(s) carried out by such user. This description should include a schematic process diagram which indicates points of discharge to the POTW from the regulated processes.
- (4) Flow Measurement. Information showing the measured average daily and maximum daily flow, in gallons per day, to the POTW from regulated process streams and other streams, as necessary, to allow use of the combined wastestream formula set out in 40 CFR 403.6(e).
- (5) Measurement of Pollutants.
 - (i) The categorical pretreatment standards applicable to each regulated process.
 - (ii) The results of sampling and analysis identifying the nature and concentration, and/or mass, where required by the standard or by the Superintendent, of regulated pollutants in the discharge from each regulated process. Instantaneous, daily maximum, and long-term average concentrations, or mass, where required, shall be reported. The sample shall be representative of daily operations and shall be analyzed in accordance with procedures set out in Section 22.59 of this ordinance.
 - (iii) Sampling must be performed in accordance with procedures set out in Section 22.60 of this ordinance.
- (6) Certification. A statement, reviewed by the user's authorized representative and certified by a qualified professional, indicating whether pretreatment standards are being met on a consistent basis, and, if not, whether additional operation and maintenance (O&M) and/or additional pretreatment is required to meet the pretreatment standards and requirements.
- (7) Compliance Schedule. If additional pretreatment and/or O&M will be required to meet the pretreatment standards, the shortest schedule by which the user will provide such additional pretreatment and/or O&M. The completion date in this schedule shall not be later than the compliance date established for the applicable pretreatment standard. A compliance schedule pursuant to this section must meet the requirements set out in Section 22.51 of this ordinance.
- (8) Signature and Certification. All baseline monitoring reports must be signed and certified in accordance with Section 22.35 of this ordinance.

22.51 Compliance Schedule Progress Reports

The following conditions shall apply to the compliance schedule required by Section 22.50(b)(7) of this

ordinance:

- (a) The schedule shall contain progress increments in the form of dates for the commencement and completion of major events leading to the construction and operation of additional pretreatment required for the user to meet the applicable pretreatment standards (such events include, but are not limited to, hiring an engineer, completing preliminary and final plans, executing contracts for major components, commencing and completing construction, and beginning and conducting routine operation);
- (b) No increment referred to above shall exceed nine (9) months;
- (c) The user shall submit a progress report to the Superintendent no later than fourteen (14) days following each date in the schedule and the final date of compliance including, as a minimum, whether or not it complied with the increment of progress, the reason for any delay, and, if appropriate, the steps being taken by the user to return to the established schedule; and
- (d) In no event shall more than nine (9) months elapse between such progress reports to the Superintendent.

22.52 Reports on Compliance with Categorical Pretreatment Standard Deadline

Within ninety (90) days following the date for final compliance with applicable categorical pretreatment standards, or in the case of a new source following commencement of the introduction of wastewater into the POTW, any user subject to such pretreatment standards and requirements shall submit to the Superintendent a report containing the information described in Section 22.50(b)(4-6) of this ordinance. For users subject to equivalent mass or concentration limits established in accordance with the procedures in 40 CFR 403.6(c), this report shall contain a reasonable measure of the user's long-term production rate. For all other users subject to categorical pretreatment standards expressed in terms of allowable pollutant discharge per unit of production (or other measure of operation), this report shall include the user's actual production during the appropriate sampling period. All compliance reports must be signed and certified in accordance with Section 22.35 of this ordinance.

22.53 Periodic Compliance Reports

- a) All significant industrial users shall, at a frequency determined by the Superintendent but in no case less than twice per year (in June and December), submit a report indicating the nature and concentration of pollutants in the discharge which are limited by pretreatment standards and the measured or estimated average and maximum daily flows for the reporting period. All periodic compliance reports must be signed and certified in accordance with Section 22.35 of this ordinance.
- (b) All wastewater samples must be representative of the user's discharge. Wastewater monitoring and flow measurement facilities shall be properly operated, kept clean, and maintained in good working order at all times. The failure of a user to keep its monitoring facility in good working order shall not be grounds for the user to claim that sample results are unrepresentative of its discharge.
- (c) If a user subject to the reporting requirement in this section monitors any pollutant more frequently than required by the Superintendent, using the procedures prescribed in Section 22.60 of this ordinance, the results of this monitoring shall be included in the report.

22.54 Reports of Changed Conditions

Each user must notify the Superintendent of any planned significant changes to the user's operations or system which might alter the nature, quality, or volume of its wastewater at least ninety (90) days before the change.

- (a) The Superintendent may require the user to submit such information as may be deemed necessary to evaluate the changed condition, including the submission of a wastewater discharge permit application under Section 22.34 of this ordinance.
- (b) The Superintendent may issue a wastewater discharge permit under Section 22.36 of this ordinance or modify an existing wastewater discharge permit under Section 22.43 of this ordinance in response to changed conditions or anticipated changed conditions.
- (c) For purposes of this requirement, significant changes include, but are not limited to, flow increases of twenty percent (20%) or greater, and the discharge of any previously unreported pollutants.

22.55 Reports of Potential Problems

- (a) In the case of any discharge, including, but not limited to, accidental discharges, discharges of a nonroutine, episodic nature, a noncustomary batch discharge, or a slug load, that may cause potential problems for the POTW, the user shall immediately telephone and notify the Superintendent of the incident. This notification shall include the location of the discharge, type of waste, concentration and volume, if known, and corrective actions taken by the user.
- (b) Within five (5) days following such discharge, the user shall, unless waived by the Superintendent, submit a detailed written report describing the cause(s) of the discharge and the measures to be taken by the user to prevent similar future occurrences. Such notification shall not relieve the user of any expense, loss, damage, or other liability which may be incurred as a result of damage to the POTW, natural resources, or any other damage to person or property; nor shall such notification relieve the user of any fines, penalties, or other liability which may be imposed pursuant to this ordinance.
- (c) A notice shall be permanently posted on the user's bulletin board or other prominent place advising employees whom to call in the event of a discharge described in paragraph (a), above. Employers shall ensure that all employees, who may cause such a discharge to occur, are advised of the emergency notification procedure.

22.56 Reports from Unpermitted Users

All users not required to obtain a wastewater discharge permit shall provide appropriate reports to the Superintendent as the Superintendent may require.

22.57 Notice of Violation/Repeat Sampling and Reporting

If sampling performed by a user indicates a violation, the user must notify the Superintendent within twenty-four (24) hours of becoming aware of the violation. The user shall also repeat the sampling and analysis and submit the results of the repeat analysis to the Superintendent within thirty (30) days after becoming aware of the violation. The user is not required to resample if the Superintendent monitors at the user's facility at least once a month, or if the Superintendent samples between the user's initial sampling and when the user receives the results of this sampling.

22.58 Notification of the Discharge of Hazardous Waste

- (a) Any user who commences the discharge of hazardous waste shall notify the POTW, the EPA Regional Waste Management Division Director, and State hazardous waste authorities, in writing, of any discharge into the POTW of a substance which, if otherwise disposed of, would be a hazardous waste under 40 CFR Part 261. Such notification must include the name of the hazardous waste as set forth in 40 CFR Part 261, the EPA hazardous waste number, and the type of discharge (continuous, batch, or other). If the user discharges more than one hundred (100) kilograms of such waste per calendar month to the POTW, the notification also shall contain the following information to the extent such information is known and readily available to the user: an identification of the hazardous constituents contained in the wastes, an estimation of the mass and concentration of such constituents in the wastestream discharged during that calendar month, and an estimation of the mass of constituents in the wastestream expected to be discharged during the following twelve (12) months. All notifications must take place no later than one hundred and eighty (180) days after the discharge commences. Any notification under this paragraph need be submitted only once for each hazardous waste discharged. However, notifications of changed conditions must be submitted under Section 22.54 of this ordinance. The notification requirement in this section does not apply to pollutants already reported by users subject to categorical pretreatment standards under the self-monitoring requirements of Sections 22.50, 22.52, and 22.53 of this ordinance.
- (b) Dischargers are exempt from the requirements of paragraph (a), above, during a calendar month in which they discharge no more than fifteen (15) kilograms of hazardous wastes, unless the wastes are acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e). Discharge of more than fifteen (15) kilograms of nonacute hazardous wastes in a calendar month, or of any quantity of acute hazardous wastes as specified in 40 CFR 261.30(d) and 261.33(e), requires a one-time notification. Subsequent months during which the user discharges more than such quantities of any hazardous waste do not require additional notification.
- (c) In the case of any new regulations under Section 3001 of RCRA identifying additional characteristics of hazardous waste or listing any additional substance as a hazardous waste, the user must notify the Superintendent, the EPA Regional Waste Management Division Director, and State hazardous waste authorities of the discharge of such substance within ninety (90) days of the effective date of such regulations.
- (d) In the case of any notification made under this section, the user shall certify that it has a program in place to reduce the volume and toxicity of hazardous wastes generated to the degree it has determined to be economically practical.
- (e) This provision does not create a right to discharge any substance not otherwise permitted to be discharged by this ordinance, a permit issued thereunder, or any applicable Federal or State law.

22.59 Analytical Requirements

All pollutant analyses, including sampling techniques, to be submitted as part of a wastewater discharge permit application or report shall be performed in accordance with the techniques prescribed in 40 CFR Part 136, unless otherwise specified in an applicable categorical pretreatment standard. If 40 CFR Part 136 does not contain sampling or analytical techniques for the pollutant in question, sampling and analyses must be performed in accordance with procedures approved by EPA.

22.60 Sample Collection

- (a) Except as indicated in Section B, below, the user must collect wastewater samples using flow proportional composite collection techniques. In the event flow proportional sampling is infeasible, the Superintendent may authorize the use of time proportional sampling or a minimum of four (4) grab samples where the user demonstrates that this will provide a representative sample of the effluent being discharged. In addition, grab samples may be required to show compliance with instantaneous discharge limits.
- (b) Samples for oil and grease, temperature, pH, cyanide, phenols, sulfides, and volatile organic compounds must be obtained using grab collection techniques.

22.61 Timing

Written reports will be deemed to have been submitted on the date postmarked. For reports which are not mailed, postage prepaid, into a mail facility serviced by the United States Postal Service, the date of receipt of the report shall govern.

22.62 Record Keeping

Users subject to the reporting requirements of this ordinance shall retain, and make available for inspection and copying, all records of information obtained pursuant to any monitoring activities required by this ordinance and any additional records of information obtained pursuant to monitoring activities undertaken by the user independent of such requirements. Records shall include the date, exact place, method, and time of sampling, and the name of the person(s) taking the samples; the dates that the analyses were performed; who performed the analyses; the analytical techniques or methods used; and the results of such analyses. These records shall remain available for a period of at least three (3) years. This period shall be automatically extended for the duration of any litigation concerning the user or the City of Brawley, or where the user has been specifically notified of a longer retention period by the Superintendent.

22.63-64 Reserved

22.65 Right of Entry: Inspection and Sampling

The Superintendent shall have the right to enter the premises of any user to determine whether the user is complying with all requirements of this ordinance and any wastewater discharge permit or order issued hereunder. Users shall allow the Superintendent ready access to all parts of the premises for the purposes of inspection, sampling, records examination and copying, and the performance of any additional duties.

- (a) Where a user has security measures in force which require proper identification and clearance before entry into its premises, the user shall make necessary arrangements with its security guards so that, upon presentation of suitable identification, the Superintendent will be permitted to enter without delay for the purposes of performing specific responsibilities.
- (b) The Superintendent shall have the right to set up on the user's property, or require installation of, such devices as are necessary to conduct sampling and/or metering of the user's operations.
- (c) The Superintendent may require the user to install monitoring equipment as necessary. The facility's sampling and monitoring equipment shall be maintained at all times in a safe and proper operating condition by the user at its own expense. All devices used to measure wastewater flow and quality shall be calibrated and maintained as recommended by the manufacturer of the equipment to ensure their accuracy.

- (d) Any temporary or permanent obstruction to safe and easy access to the facility to be inspected and/or sampled shall be promptly removed by the user at the written or verbal request of the Superintendent and shall not be replaced. The costs of clearing such access shall be born by the user.
- (e) Unreasonable delays in allowing the Superintendent access to the user's premises shall be a violation of this ordinance.

22.66 Search Warrants

If the Superintendent has been refused access to a building, structure, or property, or any part thereof, and is able to demonstrate probable cause to believe that there may be a violation of this ordinance, or that there is a need to inspect and/or sample as part of a routine inspection and sampling program of the City of Brawley designed to verify compliance with this ordinance or any permit or order issued hereunder, or to protect the overall public health, safety and welfare of the community, then the Superintendent may seek issuance of a search warrant from the Superior Court of Imperial County.

22.67 Confidential Information

Information and data on a user obtained from reports, surveys, wastewater discharge permit applications, wastewater discharge permits, and monitoring programs, and from the Superintendent's inspection and sampling activities, shall be available to the public as required by law, unless the user specifically requests, and is able to demonstrate to the satisfaction of the Superintendent, that the release of such information would divulge information, processes, or methods of production entitled to protection as trade secrets under applicable State law. Any such request must be asserted at the time of submission of the information or data. When requested and demonstrated by the user furnishing a report that such information should be held confidential, the portions of a report which might disclose trade secrets or secret processes shall not be made available for inspection by the public, but shall be made available immediately upon request to governmental agencies for uses related to the NPDES program or pretreatment program, and in enforcement proceedings involving the person furnishing the report. Wastewater constituents and characteristics and other "effluent data" as defined by 40 CFR 2.302 will not be recognized as confidential information and will be available to the public without restriction.

22.68 Publication of Users in Significant Noncompliance

The Superintendent shall publish annually, in the largest daily newspaper published in the municipality where the POTW is located, a list of the users which, during the previous twelve (12) months, were in significant noncompliance with applicable pretreatment standards and requirements. The term significant noncompliance shall mean:

- (a) Chronic violations of wastewater discharge limits, defined here as those in which sixty-six percent (66%) or more of wastewater measurements taken during a six (6) month period exceed the daily maximum limit or average limit for the same pollutant parameter by any amount;
- (b) Technical Review Criteria (TRC) violations, defined here as those in which thirty-three percent (33%) or more of wastewater measurements taken for each pollutant parameter during a six (6) month period equals or exceeds the product of the daily maximum limit or the average limit multiplied by the applicable criteria (1.4 for BOD, TSS, fats, oils and grease, and 1.2 for all other pollutants except pH);
- (c) Any other discharge violation that the Superintendent believes has caused, alone or in combination with other discharges, interference or pass through, including endangering the health of POTW personnel or the general public;
- (d) Any discharge of pollutants that has caused imminent endangerment to the public or to the environment, or has resulted in the Superintendent's exercise of its emergency authority to halt or prevent such a discharge;
- (e) Failure to meet, within ninety (90) days of the scheduled date, a compliance schedule milestone contained in a wastewater discharge permit or enforcement order for starting construction, completing construction, or attaining final compliance;
- (f) Failure to provide within thirty (30) days after the due date, any required reports, including baseline monitoring reports, reports on compliance with categorical pretreatment standard deadlines, periodic self-monitoring reports, and reports on compliance with compliance schedules;
- (g) Failure to accurately report noncompliance; or
- (h) Any other violation(s) which the Superintendent determines will adversely affect the operation or implementation of the local pretreatment program.

22.69 Reserved

22.70 Notification of Violation

When the Superintendent finds that a user has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the Superintendent may serve upon that user a written Notice of Violation. Within forty five (45) days of the receipt of this notice, an explanation of the violation and a plan for the satisfactory correction and prevention thereof, to include specific required actions, shall be submitted by the user to the Superintendent. Submission of this plan in no way relieves the user of liability for any violations occurring before or after receipt of the Notice of Violation. Nothing in this section shall limit the authority of the Superintendent to take any action, including emergency actions or any other enforcement action, without first issuing a Notice of Violation.

22.71 Consent Orders

The Superintendent may enter into Consent Orders, assurances of voluntary compliance, or other similar documents establishing an agreement with any user responsible for noncompliance. Such documents will include specific action to be taken by the user to correct the noncompliance within a time period specified by the document. Such documents shall have the same force and effect as the administrative orders issued pursuant to Sections 22.73 and 22.74 of this ordinance and shall be judicially enforceable.

22.72 Show Cause Hearing

The Superintendent may require a user which has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, to appear before the Superintendent and show cause why the proposed enforcement action should not be taken. Notice shall be served on the user specifying the time and place for the meeting, the proposed enforcement action, the reasons for such action, and a request that the user show cause why the proposed enforcement action should not be taken. The notice of the meeting shall be served personally or by registered or certified mail (return receipt requested) at least thirty (30) days prior to the hearing. Such notice may be served on any authorized representative of the user. A show cause hearing shall not be a bar against, or prerequisite for, taking any other action

against the user.

22.73 Compliance Orders

When the Superintendent finds that a user has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the Superintendent may issue an order to the user responsible for the discharge directing that the user come into compliance within a specified time. If the user does not come into compliance within the time provided, sewer service may be discontinued unless adequate treatment facilities, devices, or other related appurtenances are installed and properly operated. Compliance orders also may contain other requirements to address the noncompliance, including additional self-monitoring and management practices designed to minimize the amount of pollutants discharged to the sewer. A compliance order may not extend the deadline for compliance established for a pretreatment standard or requirement, nor does a compliance order relieve the user of liability for any violation, including any continuing violation. Issuance of a compliance order shall not be a bar against, or a prerequisite for, taking any other action against the user.

22.74 Cease and Desist Orders

When the Superintendent finds that a user has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, or that the user's past violations are likely to recur, the Superintendent may issue an order to the user directing it to cease and desist all such violations and directing the user to:

- (a) Immediately comply with all requirements; and
- (b) Take such appropriate remedial or preventive action as may be needed to properly address a continuing or threatened violation, including halting operations and/or terminating the discharge.

Issuance of a cease and desist order shall not be a bar against, or a prerequisite for, taking any other action against the user.

22.75 Administrative Fines

- (a) When the Superintendent finds that a user has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit or order issued hereunder, or any other pretreatment standard or requirement, the Superintendent may fine such user in an amount not to exceed Five Thousand (\$5,000.00) Dollars or equal to the fine imposed by the California Regional Water Quality Control Board (CRWQCB), including City administrative fees. Such fines shall be assessed on a per violation, per day basis. In the case of monthly or other long term average discharge limits, fines shall be assessed for each day during the period of violation.
- (b) Unpaid charges, fines, and penalties shall, after Thirty (30) calendar days, be assessed an additional penalty of Ten percent (10%) of the unpaid balance, and interest shall accrue thereafter at the legal rate per month. A lien against the user's property will be sought for unpaid charges, fines, and penalties.
- (c) Users desiring to dispute such fines must file a written request for the Superintendent to reconsider the fine along with full payment of the fine amount within Thirty (30) days of being notified of the fine. Where a request has merit, [the Superintendent] may convene a hearing on the matter. In the event the user's appeal is successful, the payment, together with any interest accruing thereto, shall be returned to the user. The Superintendent may add the costs of preparing administrative enforcement actions, such as notices and orders, to the fine. The decision of the Superintendent may be appealed to the City Council as set forth in Section 22.42.
- (d) Issuance of an administrative fine shall not be a bar against, or a prerequisite for, taking any other action against the user.

22.76 Emergency Suspensions

The Superintendent may immediately suspend a user's discharge, after informal notice to the user, whenever such suspension is necessary to stop an actual or threatened discharge which reasonably appears to present or cause an imminent or substantial endangerment to the health or welfare of persons. The Superintendent may also immediately suspend a user's discharge, after notice and opportunity to respond, that threatens to interfere with the operation of the POTW, or which presents, or may present, an endangerment to the environment.

- (a) User shall keep City informed as to who will receive notices.
- (b) Any user notified of a suspension of its discharge shall immediately stop or eliminate its contribution. In the event of a user's failure to immediately comply voluntarily with the

suspension order, the Superintendent may take such steps as deemed necessary, including immediate severance of the sewer connection, to prevent or minimize damage to the POTW, its receiving stream, or endangerment to any individuals. The Superintendent may allow the user to recommence its discharge when the user has demonstrated to the satisfaction of the Superintendent that the period of endangerment has passed, unless the termination proceedings in Section 22.77 of this ordinance are initiated against the user.

- (c) A user that is responsible, in whole or in part, for any discharge presenting imminent endangerment shall submit a detailed written statement, describing the causes of the harmful contribution and the measures taken to prevent any future occurrence, to the Superintendent prior to the date of any show cause or termination hearing under Sections 22.72 or 22.77 of this ordinance.

Nothing in this section shall be interpreted as requiring a hearing prior to any emergency suspension under this section.

22.77 Termination of Discharge

In addition to the provisions in Section 22.45 of this ordinance, any user who violates the following conditions is subject to discharge termination:

- (a) Repeated Violations of wastewater discharge permit conditions;
- (b) Failure to accurately report the wastewater constituents and characteristics of its discharge;
- (c) Failure to report significant changes in operations or wastewater volume, constituents, and characteristics prior to discharge;
- (d) Refusal of reasonable access to the user's premises for the purpose of inspection, monitoring, or sampling; or
- (e) Violation of the pretreatment standards in Section 22.15 through 22.20 of this ordinance.

Such user will be notified of the proposed termination of its discharge and be offered an opportunity to show cause under Section 22.72 of this ordinance why the proposed action should not be taken. Exercise of this option by the Superintendent shall not be a bar to, or a prerequisite for, taking any other action against the user. The decision of the Superintendent may be appealed to the City Council in accordance with Section 22.42. The City Council may convene prior to hearing the appeal to determine whether the decision of the Superintendent should be stayed pending the appeal.

22.78-79 Reserved

22.80 Injunctive Relief

When the Superintendent finds that a user has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, the Superintendent may petition the court through the City of Brawley's Attorney for the issuance of a temporary or permanent injunction, as appropriate, which restrains or compels the specific performance of the wastewater discharge permit, order, or other requirement imposed by this ordinance on activities of the user. The Superintendent may also seek such other action as is appropriate for legal and/or equitable relief, including a requirement for the user to conduct environmental remediation. A petition for injunctive relief shall not be a bar against, or a prerequisite for, taking any other action against a user.

22.81 Civil Penalties

- (a) A user who has violated, or continues to violate, any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement shall be liable to the City of Brawley for up to the maximum civil penalty allowed under State law per violation, per day. In the case of a monthly or other long-term average discharge limit, penalties shall accrue for each day during the period of the violation.
- (b) The Superintendent may recover reasonable attorneys' fees, court costs, and other expenses associated with enforcement activities, including sampling and monitoring expenses, and the cost of any actual damages incurred by the City.
- (c) In determining the amount of civil liability, the Court shall take into account all relevant circumstances, including, but not limited to, the extent of harm caused by the violation, the magnitude and duration of the violation, any economic benefit gained through the user's violation, corrective actions by the user, the compliance history of the user, and any other factor as justice requires.
- (d) Filing a suit for civil penalties shall not be a bar against, or a prerequisite for, taking any other action against a user.

22.82 Criminal Prosecution

- (a) A user who violates any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement shall, upon conviction, be guilty of a misdemeanor.
- (b) A user who willfully or negligently introduces any substance into the POTW which causes personal injury or property damage shall, upon conviction, be guilty of a misdemeanor.
- (c) A user who knowingly makes any false statements, representations, or certifications in any application, record, report, plan, or other documentation filed, or required to be maintained, pursuant to this ordinance, wastewater discharge permit, or order issued hereunder, or who falsifies, tampers with, or knowingly renders inaccurate any monitoring device or method required under this ordinance shall, upon conviction, be guilty of a misdemeanor.
- (d) Each day shall constitute a separate offense. The applicable penalty shall be as set forth in 40 CFR 403.8 and the California Penal Code.

22.83 Remedies Nonexclusive

The remedies provided for in this ordinance are not exclusive. The Superintendent may take any, all, or any combination of these actions against a noncompliant user. Enforcement of pretreatment violations will generally be in accordance with the City's enforcement response plan. However, the Superintendent may take other action against any user when the circumstances warrant. Further, the Superintendent is empowered to take more than one enforcement action against any noncompliant user. Appeals to the City Council of decisions made by the Superintendent may be taken as set forth in this ordinance.

22.84 Reserved

22.85 Performance Bonds

The Superintendent may decline to issue or reissue a wastewater discharge permit to any user who has failed to comply with any provision of this ordinance, a previous wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, unless such user first files a satisfactory bond, payable to the City of Brawley, in a sum not to exceed a value determined by the Superintendent to be necessary to achieve consistent compliance.

22.86 Liability Insurance

The Superintendent may decline to issue or reissue a wastewater discharge permit to any user who has failed to comply with any provision of this ordinance, a previous wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, unless the user first submits proof that it has obtained financial assurances sufficient to restore or repair damage to the POTW caused by its discharge.

22.87 Water Supply Severance Optional

Whenever a user continues to violate any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement, water service to the user may be severed. Service will only recommence, at the user's expense, after it has satisfactorily demonstrated its ability to comply.

22.88 Public Nuisances

A violation of any provision of this ordinance, a wastewater discharge permit, or order issued hereunder, or any other pretreatment standard or requirement is hereby declared a public nuisance and shall be corrected or abated as directed by the Superintendent. Any person(s) creating a public nuisance shall be subject to the provisions of the City Code governing such nuisances, including reimbursing the City of Brawley for any costs incurred in removing, abating, or remedying said nuisance.

22.89 Upset

- (a) For the purposes of this section, "upset" means an exceptional incident in which there is unintentional and temporary noncompliance with categorical pretreatment standards because of factors beyond the reasonable control of the user. An upset does not include noncompliance to the extent caused by operational error, improperly designed treatment facilities, inadequate treatment facilities, lack of preventive maintenance, or careless or improper operation.
- (b) An upset shall constitute an affirmative defense to an action brought for noncompliance with categorical pretreatment standards if the requirements of paragraph (c), below, are met.

- (c) A user who wishes to establish the affirmative defense of upset shall demonstrate, through properly signed, contemporaneous operating logs, or other relevant evidence that:
 - (1) An upset occurred and the user can identify the cause(s) of the upset;
 - (2) The facility was at the time being operated in a prudent and workman-like manner and in compliance with applicable operation and maintenance procedures; and
 - (3) The user has submitted the following information to the Superintendent within twenty-four (24) hours of becoming aware of the upset if this information is provided orally, a written submission must be provided within five (5) days:
 - (i) A description of the indirect discharge and cause of noncompliance;
 - (ii) The period of noncompliance, including exact dates and times or, if not corrected, the anticipated time the noncompliance is expected to continue; and
 - (iii) Steps being taken and/or planned to reduce, eliminate, and prevent recurrence of the noncompliance.
- (d) In any enforcement proceeding, the user seeking to establish the occurrence of an upset shall have the burden of proof.
- (e) Users will have the opportunity for a judicial determination on any claim of upset only in an enforcement action brought for noncompliance with categorical pretreatment standards.
- (f) Users shall control production of all discharges to the extent necessary to maintain compliance with categorical pretreatment standards upon reduction, loss, or failure of its treatment facility until the facility is restored or an alternative method of treatment is provided. This requirement applies in the situation where, among other things, the primary source of power of the treatment facility is reduced, lost, or fails.

22.90 Prohibited Discharge Standards

A user shall have an affirmative defense to an enforcement action brought against it for noncompliance with the general prohibitions in Section 22.12(a) of this ordinance or the specific prohibitions in Sections 22.15(b)1 through 18 of this ordinance if it can prove that it did not know, or have reason to know, that its discharge, alone or in conjunction with discharges from other sources, would cause pass through or interference and that either:

- (a) A local limit exists for each pollutant discharged and the user was in compliance with each

limit directly prior to, and during, the pass through or interference; or

- (b) No local limit exists, but the discharge did not change substantially in nature or constituents from the user's prior discharge when the City of Brawley was regularly in compliance with its NPDES permit, and in the case of interference, was in compliance with applicable sludge use or disposal requirements.

22.91 Bypass

- (a) For the purposes of this section,
 - (1) "Bypass" means the intentional diversion of wastestreams from any portion of a user's treatment facility.
 - (2) "Severe property damage" means substantial physical damage to property, damage to the treatment facilities which causes them to become inoperable, or substantial and permanent loss of natural resources which can reasonably be expected to occur in the absence of a bypass. Severe property damage does not mean economic loss caused by delays in production.
- (b) A user may allow any bypass to occur which does not cause pretreatment standards or requirements to be violated, but only if it also is for essential maintenance to assure efficient operation. These bypasses are not subject to the provision of paragraphs (c) and (d) of this section.
- (c)
 - (1) If a user knows in advance of the need for a bypass, it shall submit prior notice to the Superintendent, at least ten (10) days before the date of the bypass, if possible.
 - (2) A user shall submit oral notice to the Superintendent of an unanticipated bypass that exceeds applicable pretreatment standards within twenty-four (24) hours from the time it becomes aware of the bypass. A written submission shall also be provided within five (5) days of the time the user becomes aware of the bypass. The written submission shall contain a description of the bypass and its cause; the duration of the bypass, including exact dates and times, and, if the bypass has not been corrected, the anticipated time it is expected to continue; and steps taken or planned to reduce, eliminate, and prevent reoccurrence of the bypass. The Superintendent may waive the written report on a case-by-case basis if the oral report has been received within twenty-four (24) hours.
- (d)
 - (1) Bypass is prohibited, and the Superintendent may take an enforcement action against a user for a bypass, unless
 - (i) Bypass was unavoidable to prevent loss of life, personal injury, or severe property

damage;

(ii) There were no feasible alternatives to the bypass, such as the use of auxiliary treatment facilities, retention of untreated wastes, or maintenance during normal periods of equipment downtime. This condition is not satisfied if adequate back-up equipment should have been installed in the exercise of reasonable engineering judgment to prevent a bypass which occurred during normal periods of equipment downtime or preventive maintenance; and

(iii) The user submitted notices as required under paragraph (c) of this section.

(2) The Superintendent may approve an anticipated bypass, after considering its adverse effects, if the Superintendent determines that it will meet the three conditions listed in paragraph (d)(1) of this section.

22.92 Pretreatment Charges and Fees

The City of Brawley may adopt reasonable fees for reimbursement of costs of setting up and operating the City of Brawley Pretreatment Program which may include:

- (a) Fees for wastewater discharge permit applications including the cost of processing such applications;
- (b) Fees for monitoring, inspection, and surveillance procedures including the cost of collection and analyzing a user's discharge, and reviewing monitoring reports submitted by users;
- (c) Fees for reviewing and responding to accidental discharge procedures and construction;
- (d) Fees for filing appeals; and
- (e) Other fees as the City of Brawley may deem necessary to carry out the requirements contained herein. These fees relate solely to the matters covered by this ordinance and are separate from all other fees, fines, and penalties chargeable by the City of Brawley.

22.93 Severability

If any provision of this ordinance is invalidated by any court of competent jurisdiction, the remaining provisions shall not be effected and shall continue in full force and effect.

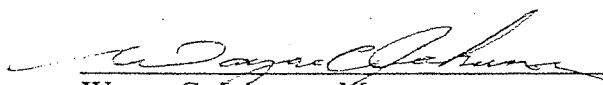
22.94 Conflicts

In the event the provisions of this Article II conflict with other provisions of this chapter, the provisions of this article shall control.

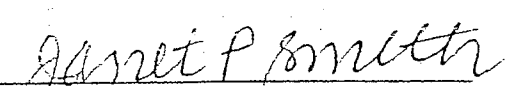
SECTION 4: This ordinance shall take effect and shall be in force thirty (30) days after the date of its adoption and prior to the expiration of fifteen (15) days from the passage thereof, shall be published at least once in the Imperial Valley Press, a newspaper of general circulation, printed and published in the County of Imperial, State of California, together with the names of the members of the City Council voting for and against same

APPROVED, PASSED, AND ADOPTED by the City Council of the City of Brawley at a regular meeting held on the 20th day of November, 2001.

CITY OF BRAWLEY, CALIFORNIA


Wayne C. Johnson, Mayor

ATTEST:


Janet P. Smith, City Clerk

State of California)

County of Imperial)

City of Brawley)

Introduction & 1st Reading

I, JANET P. SMITH, City Clerk of the City of Brawley, California, DO HEREBY CERTIFY that the foregoing Ordinance No. 2001- was approved for 1st reading by the City Council of the City of Brawley, California, at a regular meeting held on the 6th day of November, 2001 and that it was so approved by the following roll call vote: m/s/c Carrillo/Vasquez

AYES: Benson, Carrillo, Johnson, Shields, Vasquez

NAYES: None

ABSTAIN: None

ABSENT: None

Dated: November 7, 2001

2nd Reading & Adoption

I, JANET P. SMITH, City Clerk of the City of Brawley, California, DO HEREBY CERTIFY that the foregoing Ordinance No. 2001- was approved for 2nd reading by the City Council of the City of Brawley, California, at a regular meeting held on the 20th day of November , 2001, **passed and adopted** by the following roll call vote: m/s/c Vasquez/Benson

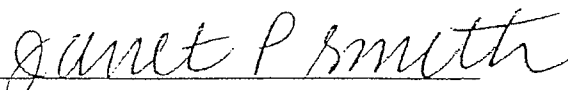
AYES: Benson, Carrillo, Johnson, Shields, Vasquez

NAYES: None

ABSTAIN: None

ABSENT: None

Dated: November 21, 2001


Janet P. Smith, City Clerk

CITY OF BRAWLEY, CALIFORNIA
NOTICE OF ADOPTION
OF A
WASTEWATER PRETREATMENT ORDINANCE

PLEASE TAKE NOTICE that during its meeting of **November 20, 2001**, the **City Council** of the City of Brawley adopted a **Wastewater Pretreatment Ordinance**. The City owns and operates a Wastewater Treatment Facility that provides treatment of sanitary waste generated within the City's Service Area. The facility is regulated by a national pollutant discharge elimination system permit issued by the Regional Water Quality Control Board. Said permit, among other things, requires the City to adopt a pretreatment ordinance where a significant industrial use will be introduced to the system. The ordinance will assist in ensuring the facility's continued compliance with applicable state and federal law. The ordinance prohibits the introduction of pollutants that will pass through the facility inadequately treated. The ordinance also provides for application and issuance of a permit as well as administrative, judicial and supplemental enforcement.

The ordinance was adopted in order to protect the public health and safety. Significant industrial discharge is imminent and the ordinance will assist the City in its continued compliance with its discharge permit and applicable state and federal law.

The Council Members voting for and against the ordinance were as follows:

State of California)
County of Imperial)
City of Brawley)

Introduction & 1st Reading

I, JANET P. SMITH, City Clerk of the City of Brawley, California, DO HEREBY CERTIFY that the foregoing Ordinance No. 2001-08 was approved for 1st reading by the City Council of the City of Brawley, California, at a regular meeting held on the 6th day of November, 2001 and that it was so approved by the following roll call vote: m/s/c Carrillo/Vasquez

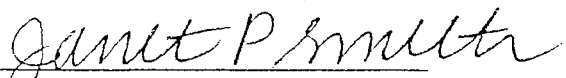
AYES:	Benson, Carrillo, Johnson, Shields, Vasquez
NAYES:	None
ABSTAIN:	None
ABSENT:	None

2nd Reading & Adoption

I, JANET P. SMITH, City Clerk of the City of Brawley, California, DO HEREBY CERTIFY that the foregoing Ordinance No. 2001-08 was approved for 2nd reading by the City Council of the City of Brawley, California, at a regular meeting held on the 20th day of November, 2001, **passed and adopted** by the following roll call vote: m/s/c Vasquez/Benson

AYES: Benson, Carrillo, Johnson, Shields, Vasquez
NAYES: None
ABSTAIN: None
ABSENT: None

DATED: November 21, 2001


Janet P. Smith, City Clerk

PUBLISH: IMPERIAL VALLEY PRESS
November 26, 2001

APPENDIX J

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